FCC PART 24 TYPE APPROVAL

EMI MEASUREMENT AND TEST REPORT

For

ZTE Corporation

ZTE Plaza, Hi-tech Park, Nanshan District, Shenzhen, Guangdong, China

FCC ID: Q78-BTSBI119

October 20, 2005

This Report Concerns: ☒ Original Report	**Equipment Type:** CDMA2000 Base Transceiver Station-I1
Test Engineer:	Sam Lin
Report No.:	RSZ05091601
Test Date:	September 21-30, 2005
Reviewed By:	Chris Zeng
Prepared By:	Bay Area Compliance Lab Corp. (ShenZhen) 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China Tel: +86-755-33320018 Fax: +86-755-33320008

TABLE OF CONTENTS

GENERAL INFORMATION

Product Description for Equipment Under Test (EUT)

The *ZTE Corporation*'s product, model number: ZXC10 BTSB I119 or the "EUT" as referred to in this report is a CDMA2000 Base Transceiver Station-I1. The EUT is measured approximately 70.0 cm L x 80.0cmW x 160.0cmH, rated input voltage: DC -48 V.

** The test data gathered are from production sample, serial number: 051015705020006, provided by the manufacturer, we received the EUT on 2005-9-19.*

Objective

This Type approval report is prepared on behalf of ZTE Corporation in accordance with Part 2, Subpart J, and Part 24 Subpart E of the Federal Communication Commissions rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All tests and measurements indicated in this document were performed in accordance with the Code of federal Regulations Title 47 Part 2,Sub-part J as well as the following parts:

Part 24 Subpart E - PCS

Applicable Standards: TIA EIA 137-A, TIA EIA 97-D, TIA/EIA 603-B, Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

Test Facility

The Test site used by Bay Area Compliance Lab Corp. (ShenZhen) to collect test data is located in the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone, ShenZhen, Guangdong 518038, P.R.China.

Test site at Bay Area Compliance Lab Corp. (ShenZhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 04, 2004. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2003.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Additionally, Bay Area Compliance Lab Corp. (ShenZhen) is a National Institute of Standards and Technology (NIST) accredited laboratory, under the National Voluntary Laboratory Accredited Program (Lab Code 200707-0). The current scope of accreditations can be found at http://ts.nist.gov/ts/htdocs/210/214/scopes/2007070.htm

External I/O Cable

Cable Description	Length (M)	From/Port	To
Unshielded Detachable DC Power Cable	2.5	EUT	DC Power

SYSTEM TEST CONFIGURATION

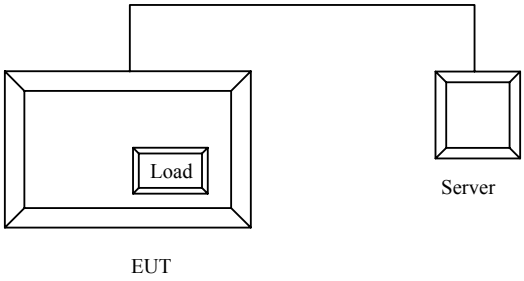
Description of Test Configuration

The system was configured for testing in a typical fashion (as normally used by a typical user).

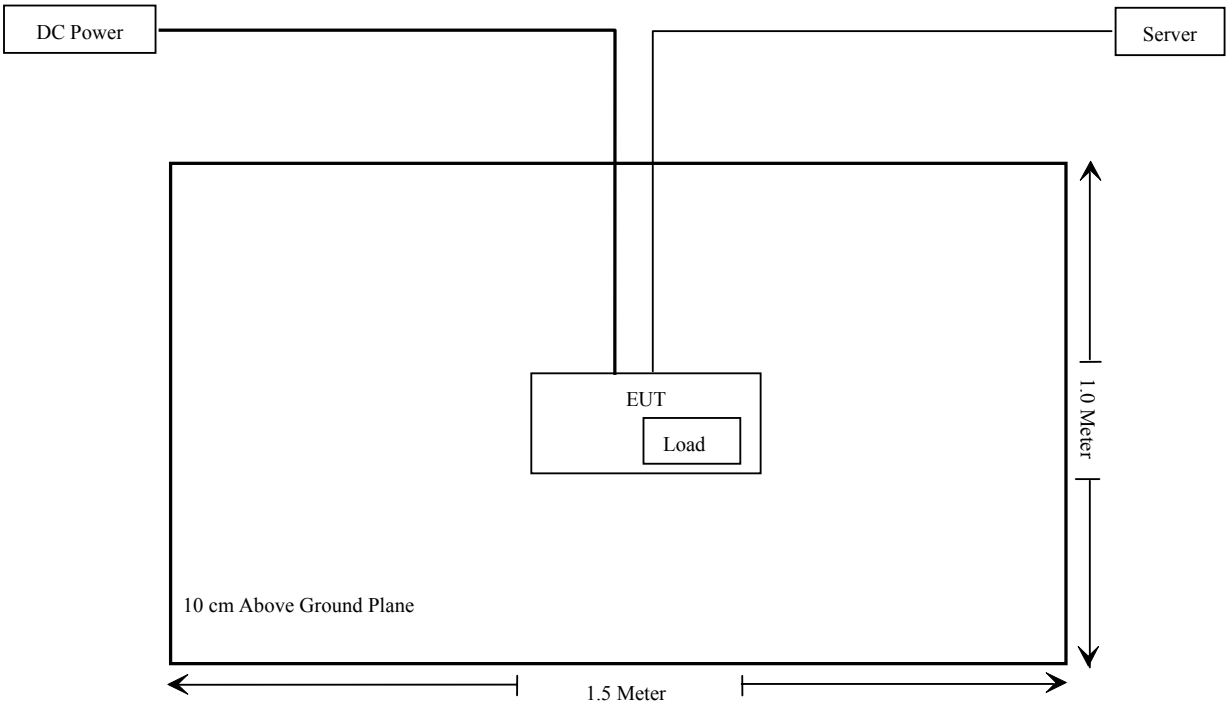
Equipment Modifications

Bay Area Compliance Lab Corp. (ShenZhen) has not done any modification on the EUT.

Configuration of Test Setup



Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC RULES	DESCRIPTION OF TEST	RESULT
§2.1046, §24.232	Conducted Output Power	Compliant
§ 2.1091	RF Exposure	Compliant
§2.1047	Modulation characteristic	Compliant
§15.109(a)	Unintentional Radiation Emission	Compliant
§2.1053	Spurious Radiated Emissions	Compliant
§2.1051, §24.238(a)	Spurious Emissions AT Antenna Terminals	Compliant
§2.1049, §24.238	Occupied Bandwidth	Compliant
§24.238	Band Edge	Compliant
§ 2.1055 (a) § 2.1055 (d) § 24.235	Frequency stability	Compliant

§2.1091 - RF EXPOSURE

Limit

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1093 RF exposure is calculated.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f\2\)	6
30-300.	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6

f = frequency in MHz
* = Plane-wave equivalent power density

Test Data

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S = PG/4\pi R^2$

Where: S = power density
P = power input to antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Maximum peak output power at antenna input terminal: 46.69 (dBm)
Maximum peak output power at antenna input terminal: 46.67 (W)
Prediction distance: 250 (cm)
Predication frequency: 1931.25 (MHz)
Antenna Gain (typical): 17 (dBi)
Power density at predication frequency at 250 cm: 1.011 (mW/cm^2)
MPE limit for uncontrolled exposure at prediction frequency: 5 (mW/cm^2)

Test Result: Pass

§2.1046, §24.232- CONDUCTED OUTPUT POWER

Applicable Standard

According to FCC §2.1046 and §24.232(a), in no case may the peak output power of a base station transmitter exceed 100 watt.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2005-6-3	2006-6-3

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1015 mbar

The testing was performed by Sam Lin on 2005-9-27.

Test Result: Pass

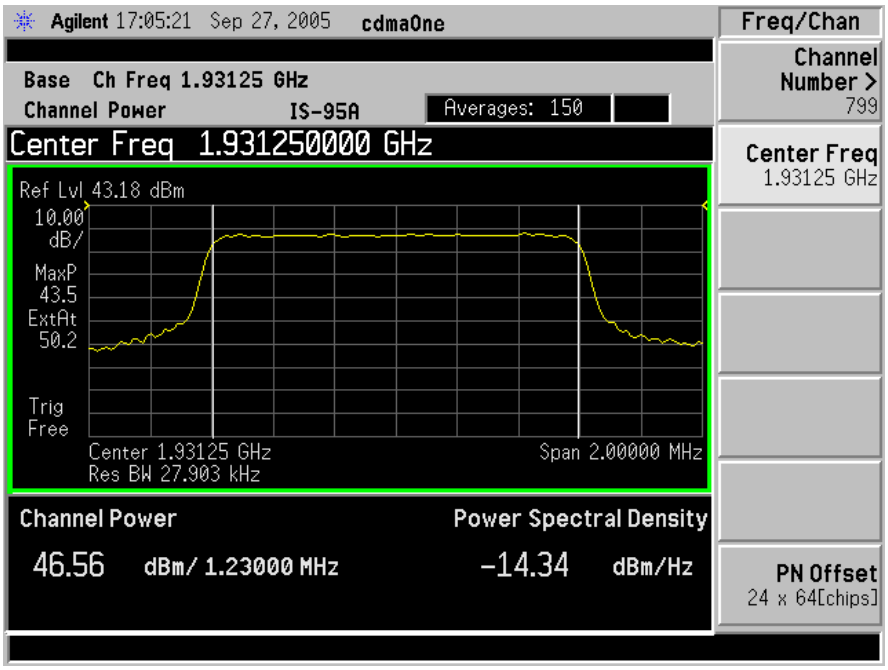
Test Mode: Transmitting

The result has been complied with the §2.1046, §24.232, see the following plot:

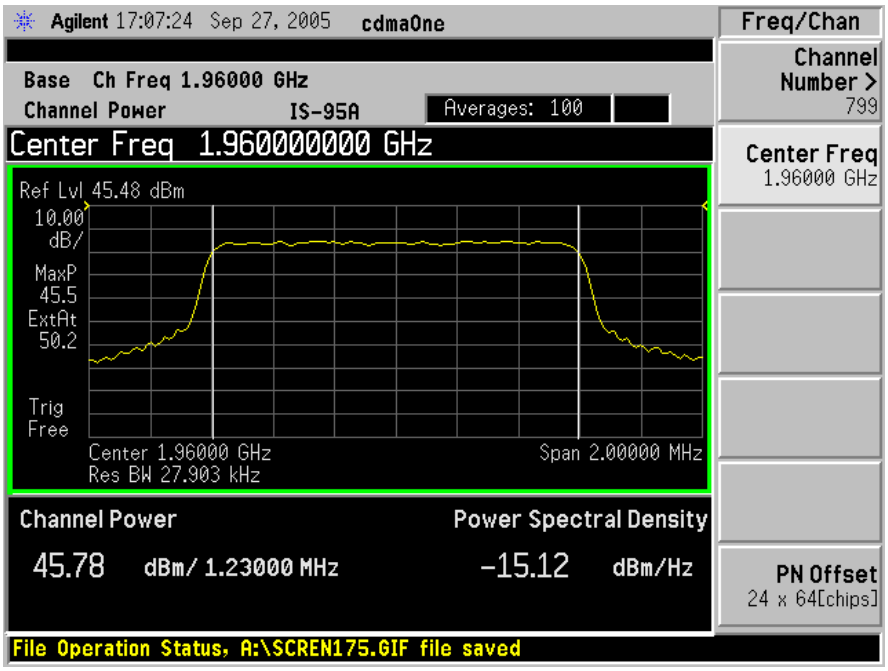
For 1 Carrier

Channel	Frequency (MHz)	Output Power in dBm	Output Power in W	Limit in W
Channel 25	1931.25	46.56	45.29	100
Channel 600	1960.00	45.78	37.84	100
Channel 1175	1988.75	46.16	41.34	100

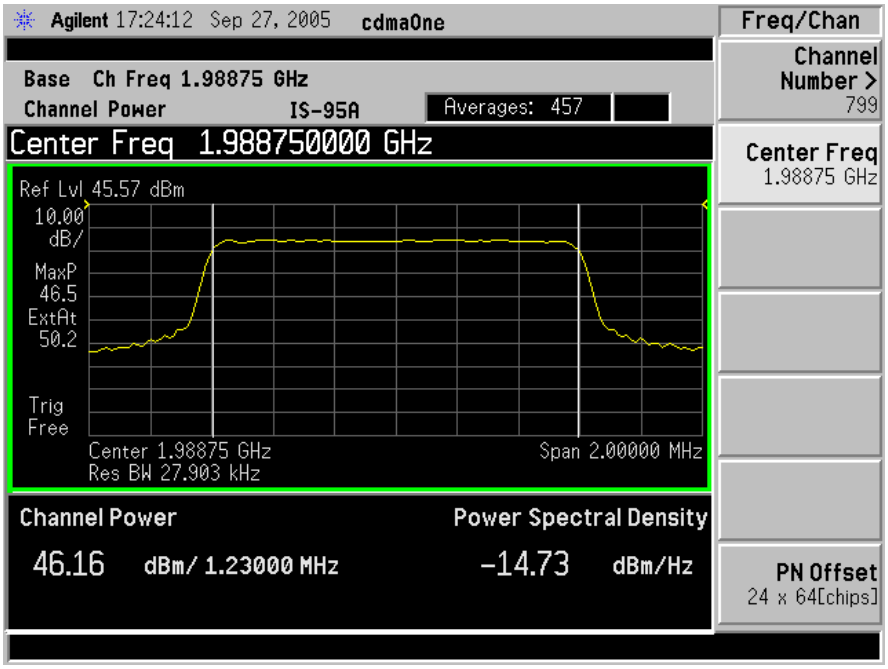
Channel 25



Channel 600



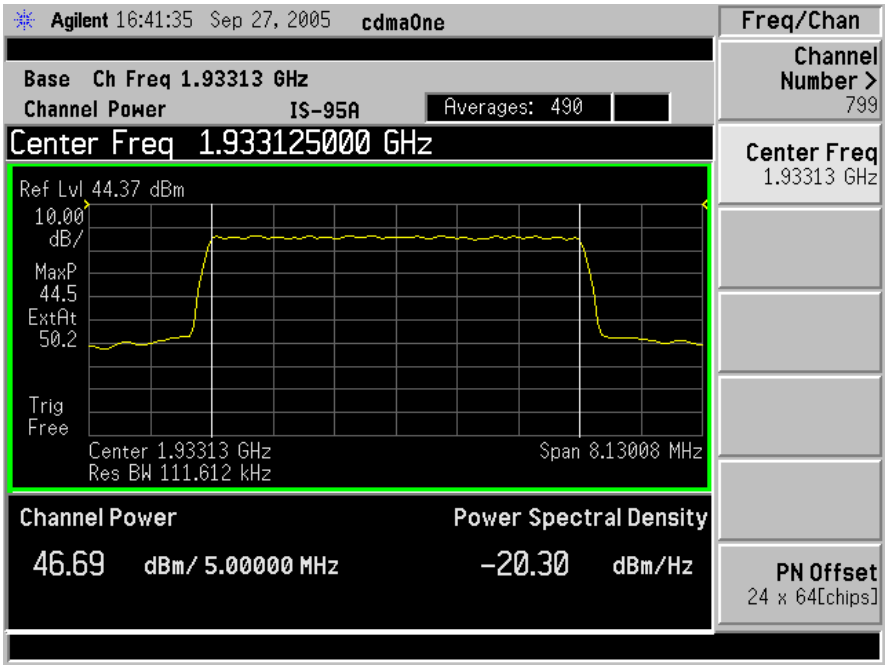
Channel 1175



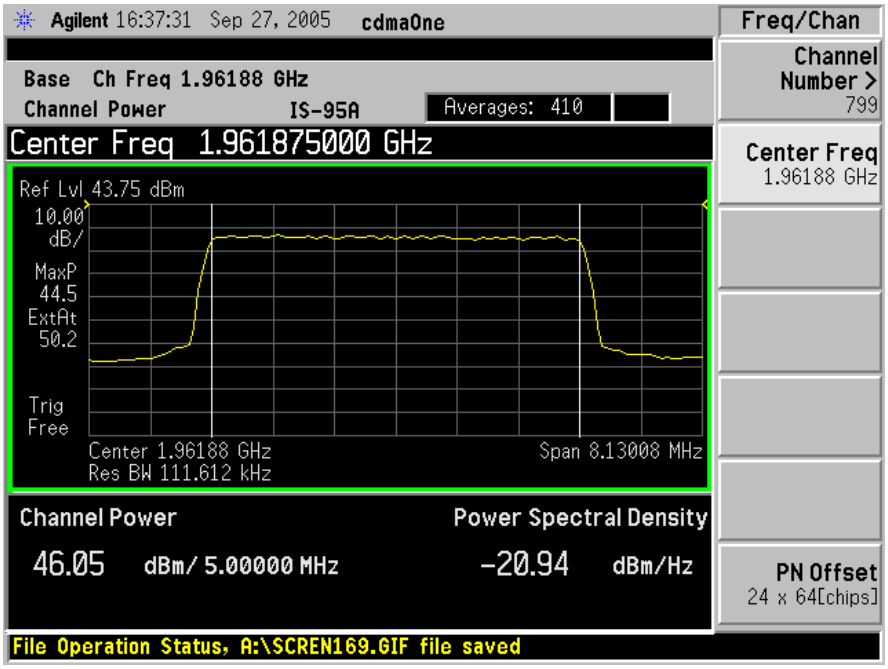
For 4 Carrier

Channel	Frequency (MHz)	Output Power in dBm	Output Power in W	Limit in W
Channel 25, 50, 75, 100	1931.25	46.69	46.67	100
Channel 600, 625, 650, 675	1960.00	46.05	40.27	100
Channel 1100, 1125, 1150, 1175	1988.75	46.51	44.77	100

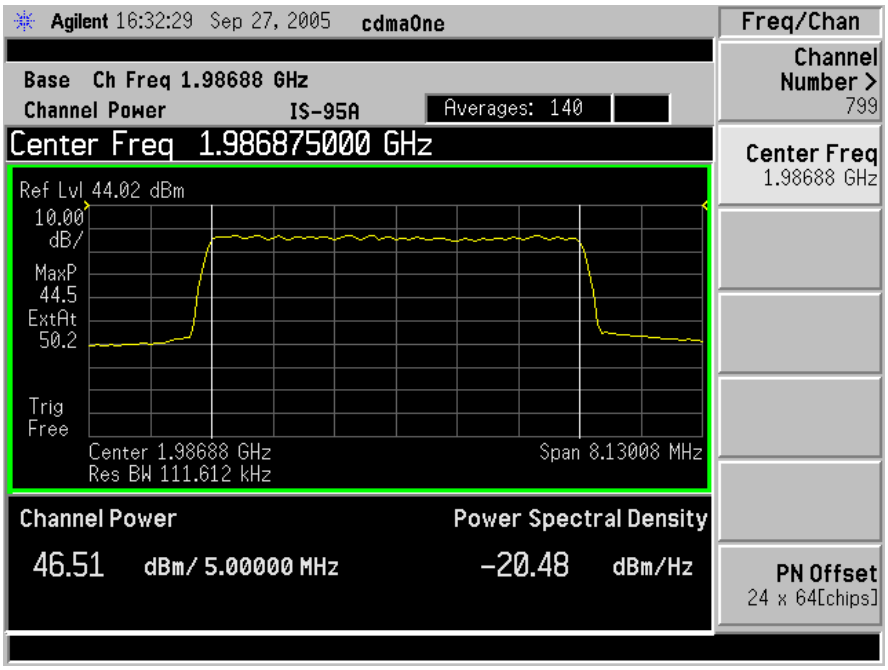
Channel 25, 50, 75, 100



Channel 600, 625, 650, 675



Channel 1100, 1125, 1150, 1175



§2.1047- MODULATION CHARACTERISTIC

Applicable Standard

Requirement: §2.1047.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2005-6-3	2006-6-3

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

CDMA digital mode is used by EUT.

Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

The testing was performed by Sam Lin on 2005-9-29.

Test Result: Pass

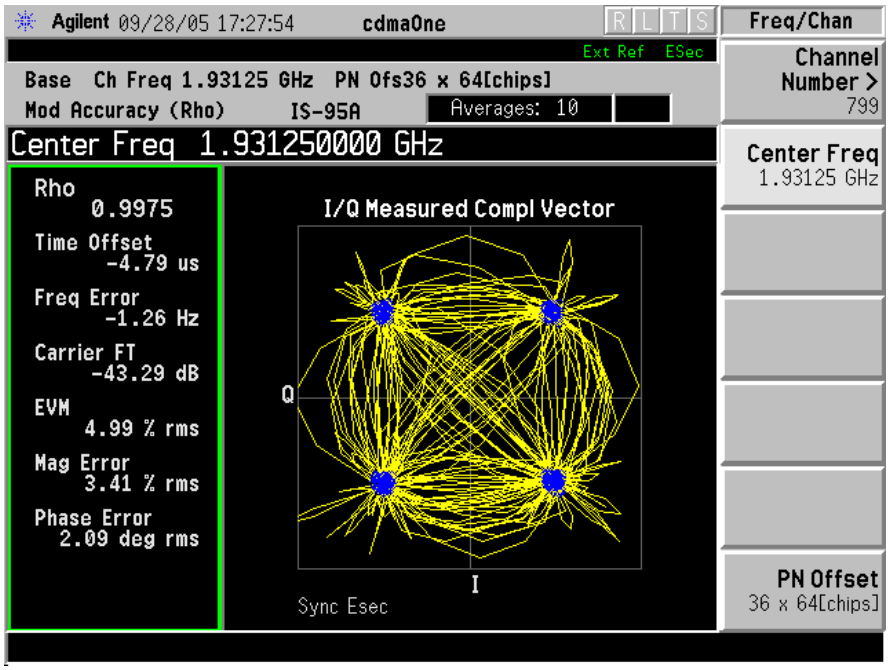
Test Mode: Transmitting

The result has been complied with the §2.1047, see the following plot:

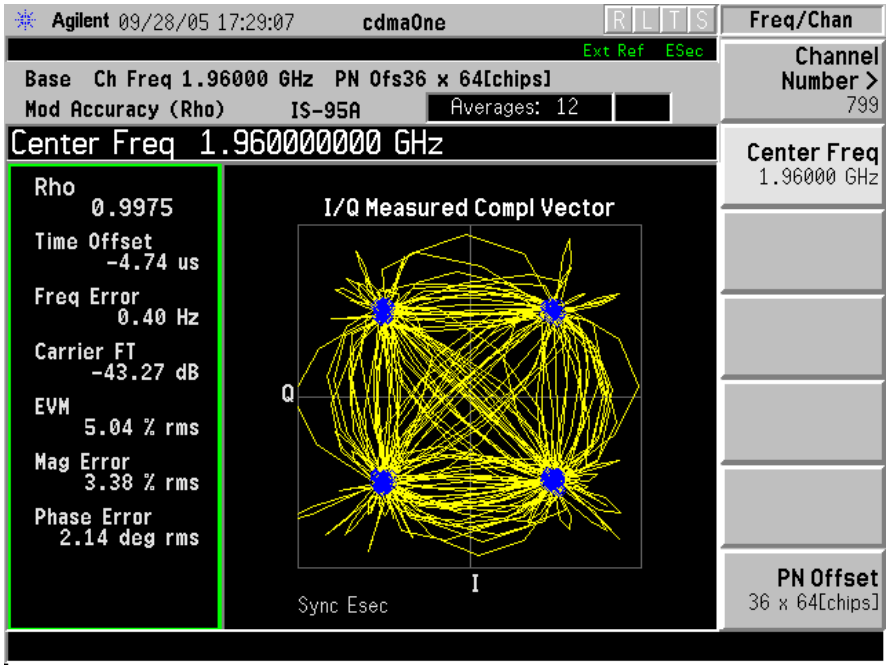
For 1 Carrier

Channel	Frequency (MHz)	Rho
Channel 25	1931.25	0.9975
Channel 600	1960.00	0.9975
Channel 1175	1988.75	0.9976

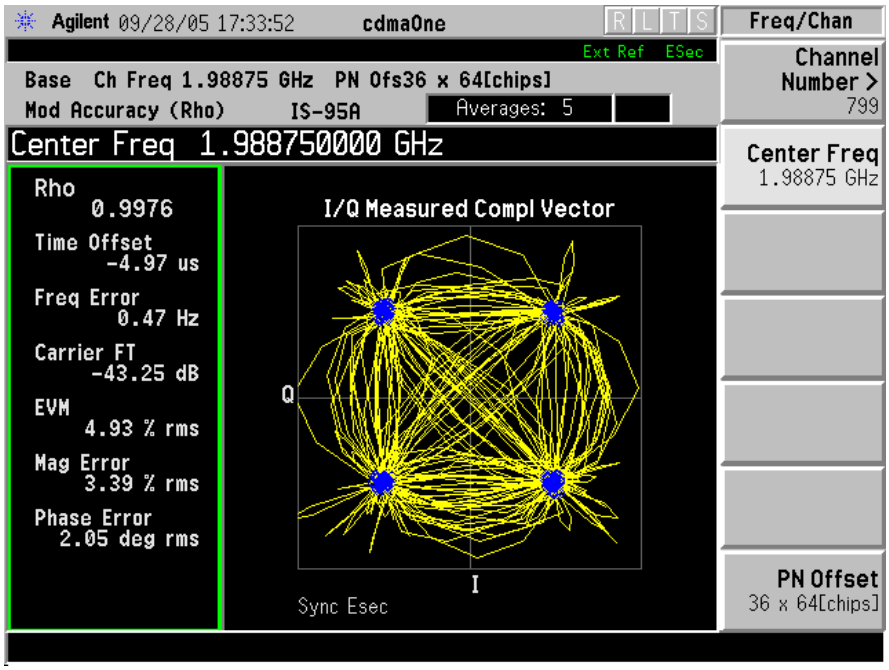
Channel 25



Channel 600



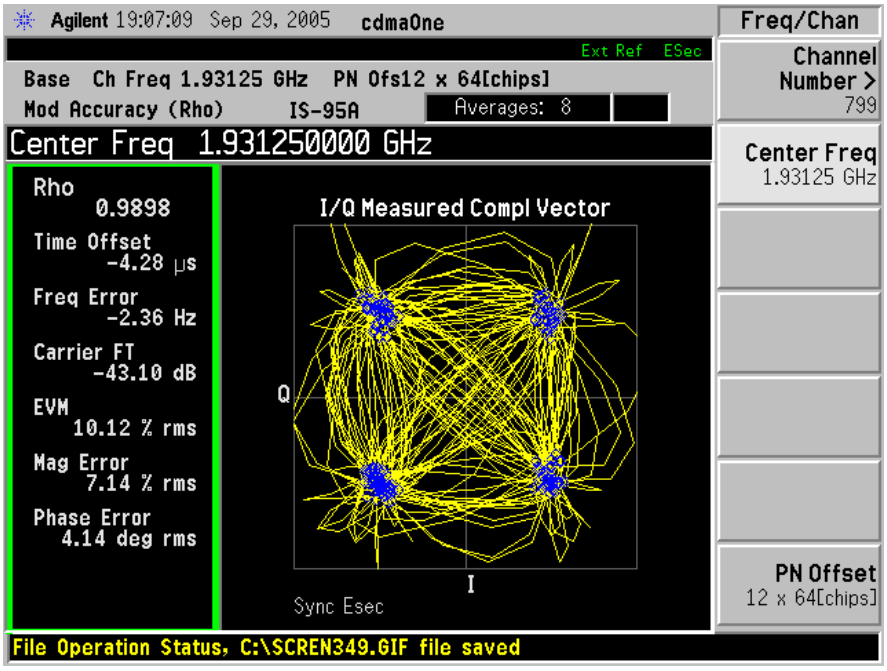
Channel 1175



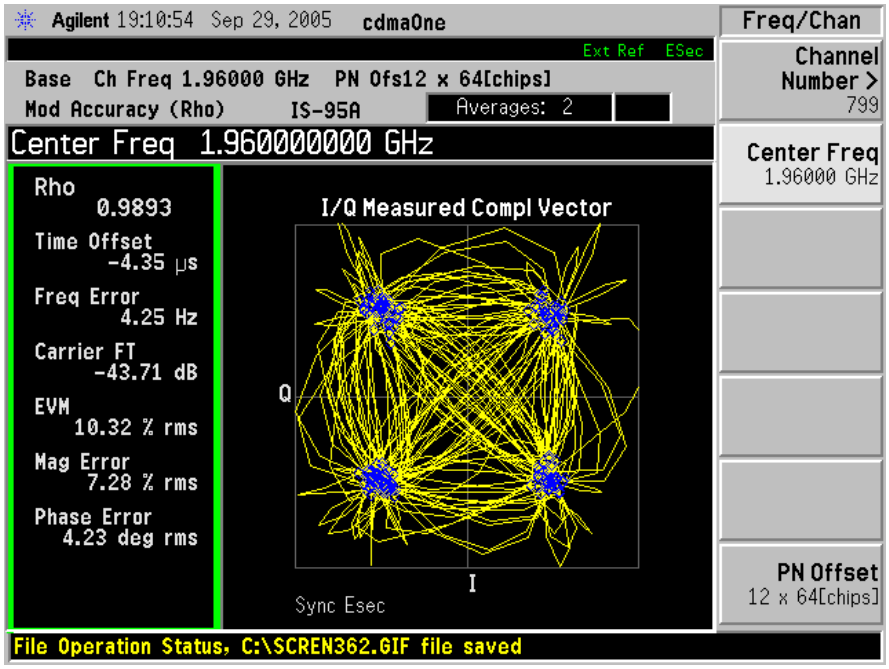
For 4 Carrier

Channel	Frequency (MHz)	Rho
Channel 25, 50, 75, 100	1931.25	0.9898
Channel 600, 625, 650, 675	1960.00	0.9893
Channel 1100, 1125, 1150, 1175	1988.75	0.9898

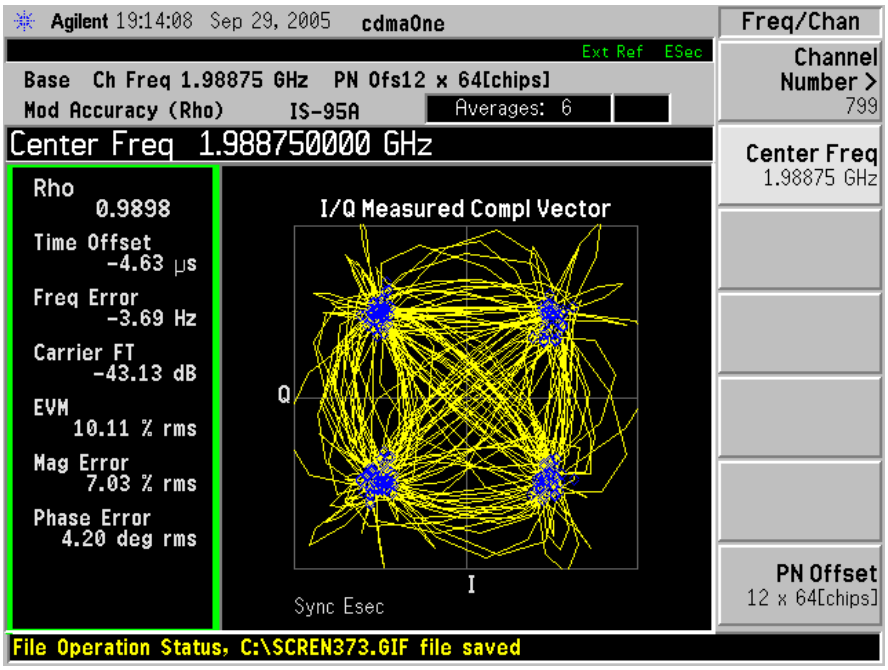
Channel 25, 50, 75, 100



Channel 600, 625, 650, 675



Channel 1100, 1125, 1150, 1175



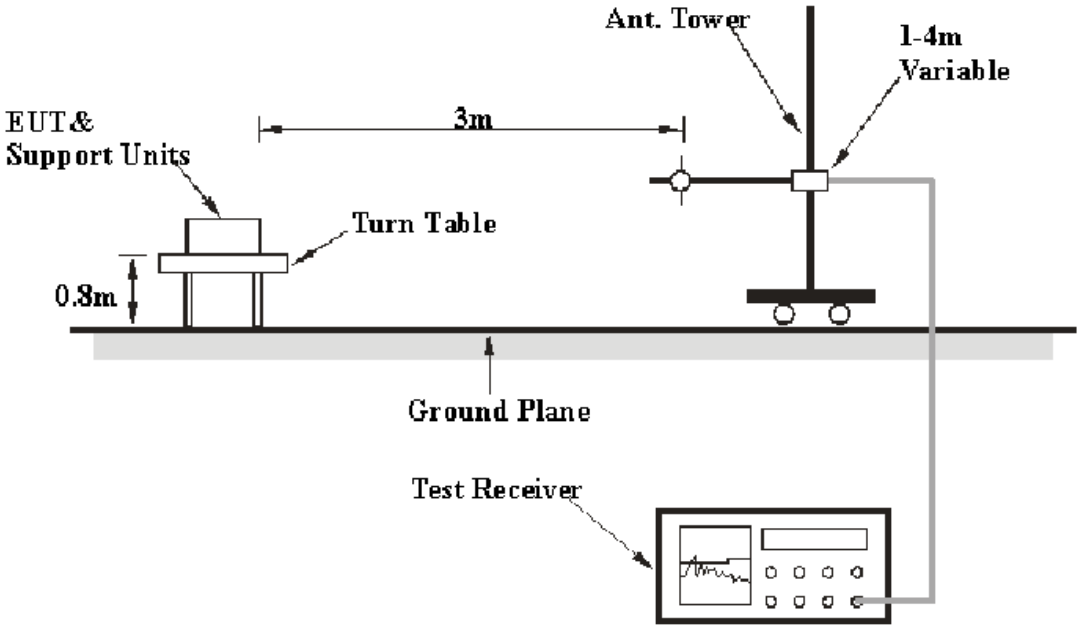
§15.109(a)- UNINTENTIONAL RADIATED EMISSION

Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

Based on NIS 81, The Treatment of Uncertainty in EMC Measurements, the best estimate of the uncertainty of a radiation emissions measurement at Bay Area Compliance Lab Corp. (ShenZhen) is ±4.0 dB.

EUT Setup



The radiated emission tests were performed in the 3-meter Chamber B using the setup accordance with the ANSI C63.4-2003. The specification used was the FCC 15.109(a) limits.

EMI Test Receiver Setup

The system was investigated from 30 MHz to 1000 MHz.

During the radiated emission test, the EMI Test Receiver was set with the following configurations:

Frequency Range	***RBW***	***Video B/W***	***IF B/W***
30 – 1000 MHz	100 kHz	300kHz	120kHz

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8447D	2944A09795	2005-8-17	2006-8-17
Rohde & Schwarz	Test Receiver	ESCI	100028	2005-8-17	2006-8-17
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2005-4-28	2006-4-28

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the PK detection mode.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Loss and Cable Loss, and subtracting the Amplifier Gain from the Meter reading. The basic equation is as follows:

Corr. Ampl. =Meter Reading + Antenna Loss+ Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of -7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Corr. Ampl. –Limit

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.109(a), with the worst margin reading of:

-7.2 dB at **528.24 MHz** in the **Horizontal** polarization.

Test Data

Environmental Conditions

Temperature:	26 °C
Relative Humidity:	47 %
ATM Pressure:	1000 mbar

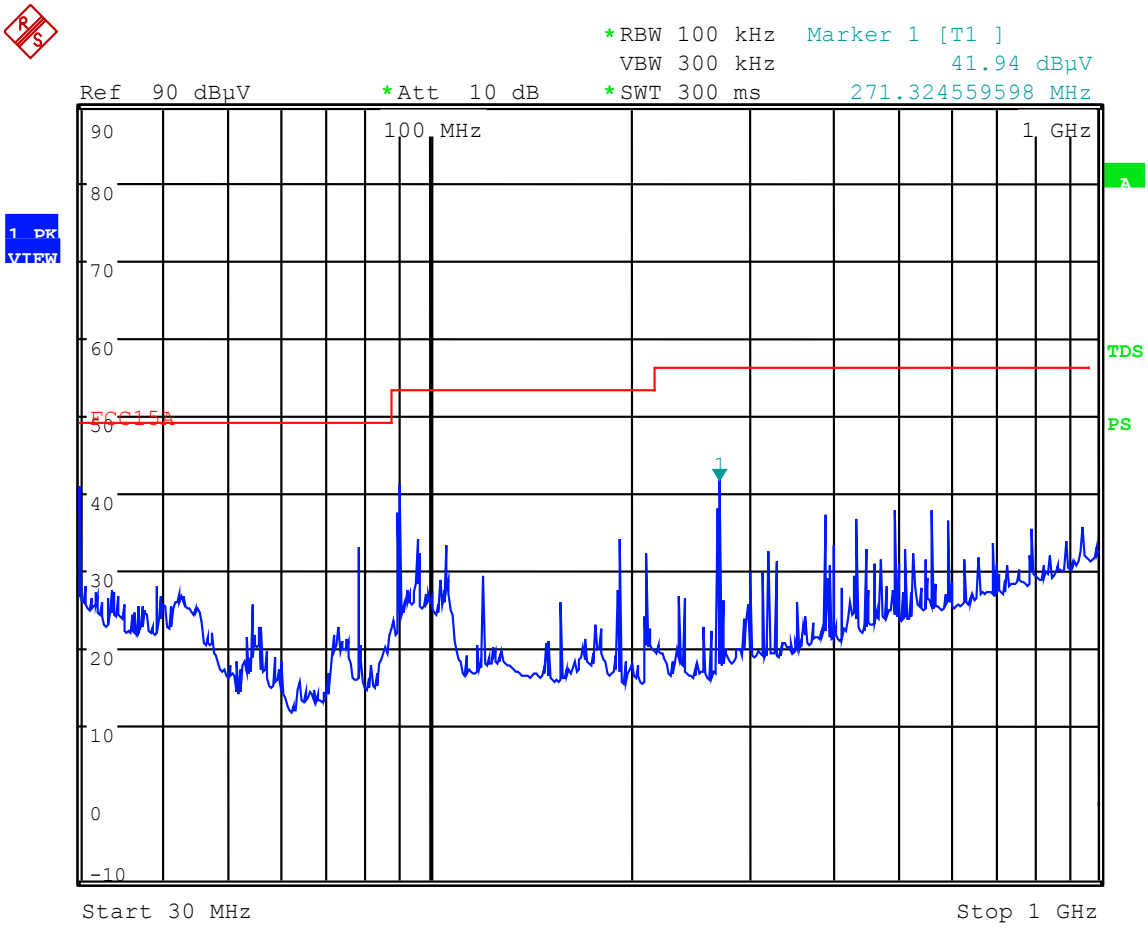
The testing was performed by Sam Lin on 2005-9-21, and the data were only for unintentional radiator and be subjected to verification

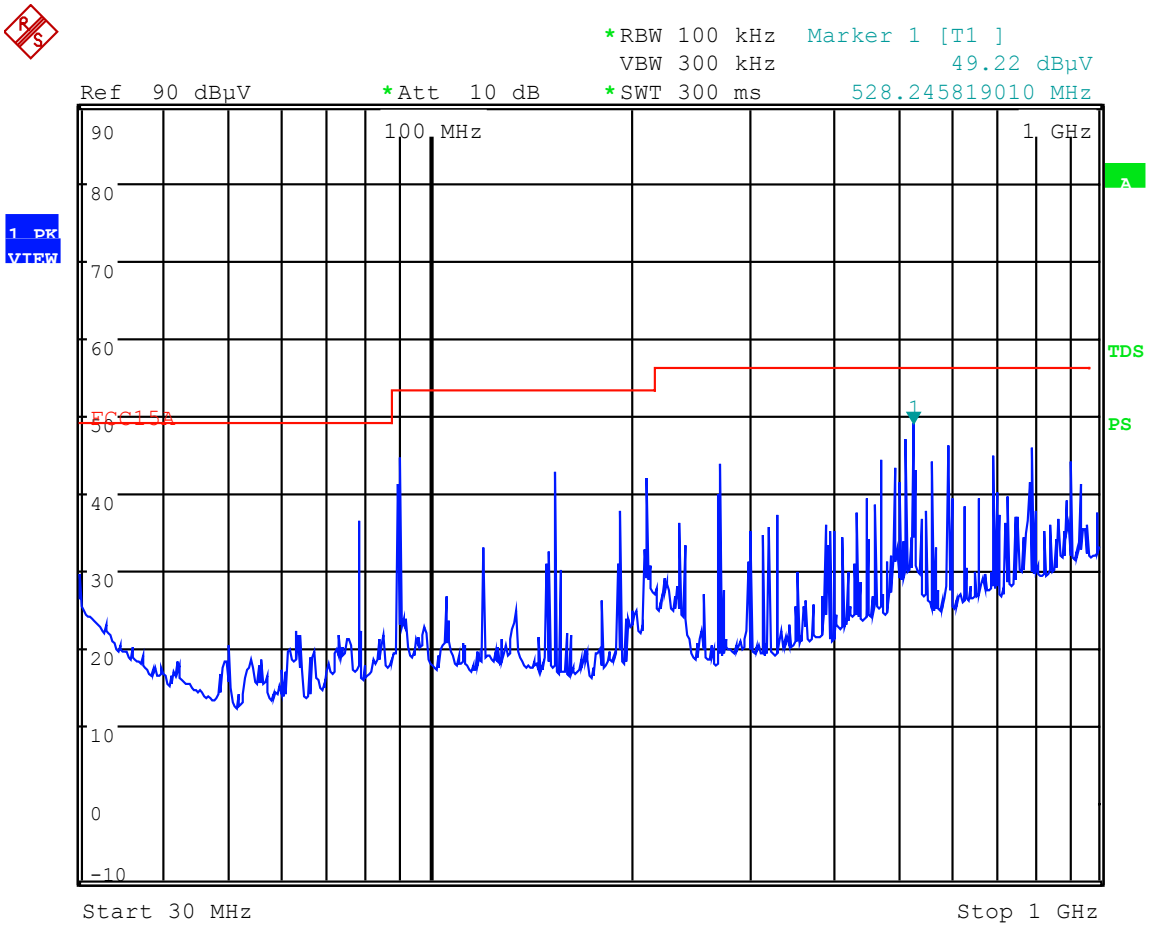
Test Mode: Transmitting

INDICATED		TABLE	ANTENNA		CORRECTION FACTOR			CORRECTED AMPLITUDE	FCC Part 15.109(a)	
Frequency	Meter Reading	Angle	Height	Polar	Antenna Loss	Cable Loss	Amplifier Gain	Corr. Ampl.	Limit	Margin
MHz	dBμV/m	Degree	Meter	H/ V	dB	dB	dB	dBμV/m	dBμV/m	dB
528.240	53.3	45	1.0	H	18.3	4.7	27.1	49.2	56.4	-7.20
90.220	61.9	35	3.8	H	7.7	1.9	26.8	44.7	53.5	-8.80
793.390	45.1	60	1.2	H	21.9	6.0	26.9	46.1	56.4	-10.30
153.730	54.4	45	1.2	H	13.1	2.0	26.6	42.9	53.5	-10.60
210.780	54.2	90	1.2	H	11.4	2.6	26.0	42.2	53.5	-11.30
90.220	58.4	289	1.0	V	7.7	1.9	26.8	41.2	53.5	-12.30
271.320	54.2	35	3.8	H	12.6	3.2	26.0	43.9	56.4	-12.50
271.320	52.2	289	1.0	V	12.6	3.2	26.0	41.9	56.4	-14.50
78.410	49.5	45	1.0	V	8.6	1.8	26.8	33.1	49.1	-16.00
562.660	41.1	60	1.0	V	19.0	4.9	27.1	37.9	56.4	-18.50
96.090	50.8	45	1.2	V	8.2	2.0	26.8	34.2	53.5	-19.30
192.410	46.5	180	1.2	V	11.8	2.4	26.6	34.1	53.5	-19.40

Plot(s) of Test Data

Plot(s) of Test Data is presented hereinafter as reference.


*RBW 100 kHz
VBW 300 kHz
*SWT 300 ms
Marker 1 [T1]
41.94 dBµV
271.324559598 MHz
Ref 90 dBµV
*Att 10 dB
100 MHz
1 GHz
1 PK VIEW
A
TDS
PS
FCC15B
90
80
70
60
50
40
30
20
10
0
-10
Start 30 MHz
Stop 1 GHz


*RBW 100 kHz
VBW 300 kHz
*SWT 300 ms
Marker 1 [T1]
49.22 dBµV
528.245819010 MHz
Ref 90 dBµV
*Att 10 dB
100 MHz
1 GHz
1 PK VIEW
A
TDS
PS
FCC15A
90
80
70
60
50
40
30
20
10
0
-10
Start 30 MHz
Stop 1 GHz

§2.1053- SPURIOUS RADIATED EMISSIONS

Applicable Standard

Requirements: CFR 47, §2.1053

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	8449B	3008A00277	2005-8-17	2006-8-17
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2004-11-10	2005-11-10
SUNOL SCIENCES	Horn Antenna	DRH-118	A052604	2005-7-20	2006-7-20
A.H. System	Horn Antenna	SAS-200/571	135	2005-4-28	2006-4-28
Giga-tronics	Signal Generator	1026	270801	2005-2-28	2006-2-28

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The transmitter was placed on a wooden turntable, and it was transmitting into a non-radiating load, which was also placed on the turntable.

The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT .The test was performed by placing the EUT on 3-orthogonal axis.

The frequency range up to teeth harmonic of the fundamental frequency was investigated.

Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

Spurious emissions in dB =10 1g (TXpwr in Watts/0.001)-the absolute level

Spurious attenuation limit in dB =43+10 Log_{10} (power out in Watts)

Test Results Summary

Channel 25: -31.77 dB at 1072.14 MHz
Channel 600: -33.18 dB at 1132.26 MHz
Channel 1175: -32.10dB at 1072.14 MHz

Test Data

Environmental Conditions

Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

The testing was performed by Sam Lin on 2005-9-21

Test Mode: Transmitting

Indicated		Table	Test Antenna		Substituted			Antenna	Cable	Absolute	Limit	Margin
Frequency MHz	Meter Reading dBuV/m	Angle Degree	Height Meter	Polar H/V	Frequency MHz	Level dBm	Polar H/V	Gain Correction dBi	Loss dB	Level dBm	dBm	dB
Channel 25 f=1931.25MHz												
1072.14	48.04	90	1.2	H	1072.14	-49.96	H	5.7	0.51	-44.77	-13.00	-31.77
1096.19	46.79	180	1.2	V	1096.19	-51.21	V	5.7	0.51	-46.02	-13.00	-33.02
3862.50	45.92	45	1.2	H	3862.50	-52.08	H	6.6	1.01	-46.49	-13.00	-33.49
5793.75	44.04	60	1.2	V	5793.75	-53.96	V	8.5	1.09	-46.55	-13.00	-33.55
5793.75	43.84	45	1.0	H	5793.75	-54.16	H	8.5	1.09	-46.75	-13.00	-33.75
11587.50	43.28	45	1.0	V	11587.5	-54.72	V	8.6	1.12	-47.24	-13.00	-34.24
11587.50	43.16	45	1.0	H	11587.50	-54.84	H	8.6	1.12	-47.36	-13.00	-34.36
7725.01	43.56	0	1.0	H	7725.01	-54.44	H	8.2	1.33	-47.57	-13.00	-34.57
7725.00	42.83	45	1.2	V	7725.00	-55.17	V	8.2	1.33	-48.30	-13.00	-35.30
3862.50	44.09	270	1.0	V	3862.50	-53.91	V	6.6	1.01	-48.32	-13.00	-35.32
9656.25	44.04	180	1.2	V	9656.25	-53.96	V	7.2	1.58	-48.34	-13.00	-35.34
9656.25	44.02	60	1.0	H	9656.25	-53.98	H	7.2	1.58	-48.36	-13.00	-35.36
Channel 600 f=1960.00MHz												
1132.26	47.83	158	1.2	H	1132.26	-51.87	H	6.2	0.51	-46.18	-13.00	-33.18
5880.01	43.99	220	1.0	V	5880.01	-54.21	V	8.5	1.12	-46.83	-13.00	-33.83
5880.08	43.77	60	1.0	H	5880.08	-54.23	H	8.5	1.12	-46.85	-13.00	-33.85
1144.28	47.15	238	1.0	V	1144.28	-52.55	V	6.2	0.51	-46.86	-13.00	-33.86
7840.11	44.01	97	1.2	V	7840.11	-54.19	V	8.2	1.18	-47.17	-13.00	-34.17
9800.01	44.25	125	1.2	H	9800.01	-55.45	H	8.2	1.58	-48.83	-13.00	-35.83
9800.09	44.17	300	1.0	V	9800.09	-54.03	V	6.7	1.58	-48.91	-13.00	-35.91
3920.03	43.56	115	1.0	V	3920.03	-54.64	V	6.6	0.95	-48.99	-13.00	-35.99
11759.97	43.32	270	1.2	V	11759.97	-56.38	V	8.1	1.19	-49.47	-13.00	-36.47
7840.02	43.14	90	1.0	H	7840.02	-56.56	H	8.2	1.18	-49.54	-13.00	-36.54
11760.05	43.11	180	1.0	H	11760.05	-56.59	H	8.1	1.19	-49.68	-13.00	-36.68
3920.02	43.54	360	1.2	H	3920.02	-56.16	H	6.6	0.95	-50.51	-13.00	-37.51

Indicated		Table	Test Antenna		Substituted			Antenna	Cable	Absolute	Limit	Margin
Frequency MHz	Meter Reading dBuV/m	Angle Degree	Height Meter	Polar H/V	Frequency MHz	Level dBm	Polar H/V	Gain Correction dBi	Loss dB	Level dBm	dBm	dB
Channel 1175 f=1988.75MHz												
1072.14	48.31	238	1.2	H	1072.14	-50.29	H	5.7	0.51	-45.10	-13.00	-32.10
1132.26	47.22	162	1.0	V	1132.26	-50.78	V	5.7	0.51	-45.59	-13.00	-32.59
5966.25	44.04	263	1.2	V	5966.25	-54.16	V	8.3	1.12	-46.98	-13.00	-33.98
11932.52	42.95	120	1.0	V	11932.52	-55.05	V	9.0	1.19	-47.24	-13.00	-34.24
7955.06	44.06	124	1.2	V	7955.06	-54.34	V	7.9	1.18	-47.62	-13.00	-34.62
11932.51	43.74	228	1.0	H	11932.51	-55.46	H	9.0	1.19	-47.65	-13.00	-34.65
5966.27	44.02	98	1.0	H	5966.27	-55.28	H	8.3	1.12	-48.10	-13.00	-35.10
3977.52	43.45	125	1.0	H	3977.52	-54.15	H	6.6	0.95	-48.50	-13.00	-35.50
3977.48	43.92	321	1.0	V	3977.48	-54.58	V	6.6	0.95	-48.93	-13.00	-35.93
9943.75	43.89	309	1.0	V	9943.75	-55.41	V	7.1	1.6	-49.91	-13.00	-36.91
9943.79	44.00	168	1.0	H	9943.79	-55.70	H	7.1	1.6	-50.20	-13.00	-37.20
7955.02	42.45	196	1.0	H	7955.02	-56.95	H	7.9	1.18	-50.23	-13.00	-37.23

§2.1051, §24.238(a)- SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Applicable Standard

Requirements: CFR 47§ 2.1051 & §24.238(a)

The spectrum was to be investigated to the tenth harmonics of the highest fundamental frequency as specified in §2.1057

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2004-11-10	2005-11-10

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 100 kHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonic.

Test Data

Environmental Conditions

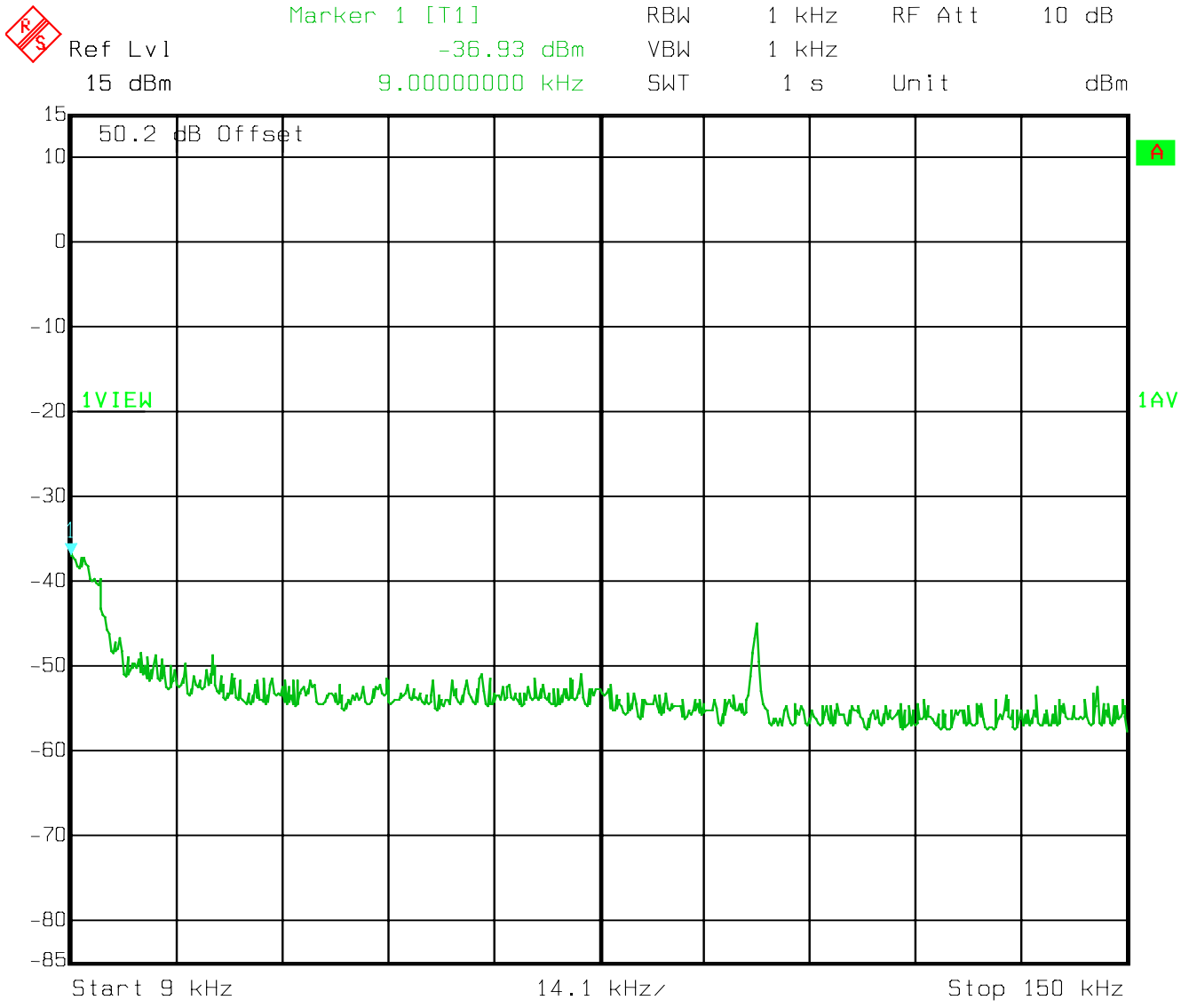
Temperature:	18 °C
Relative Humidity:	53 %
ATM Pressure:	1009 mbar

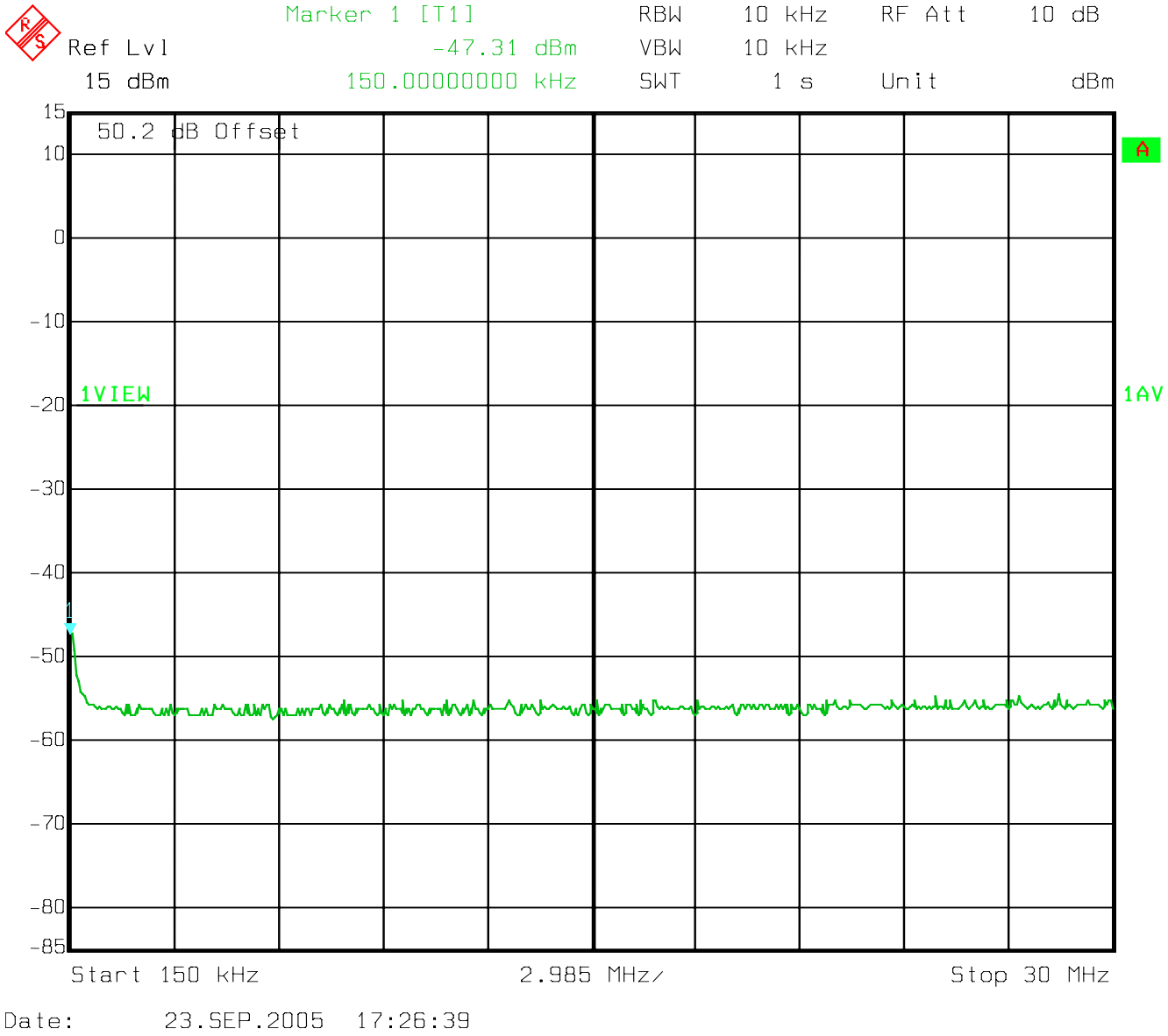
The testing was performed by Sam Lin on 2005-9-23.

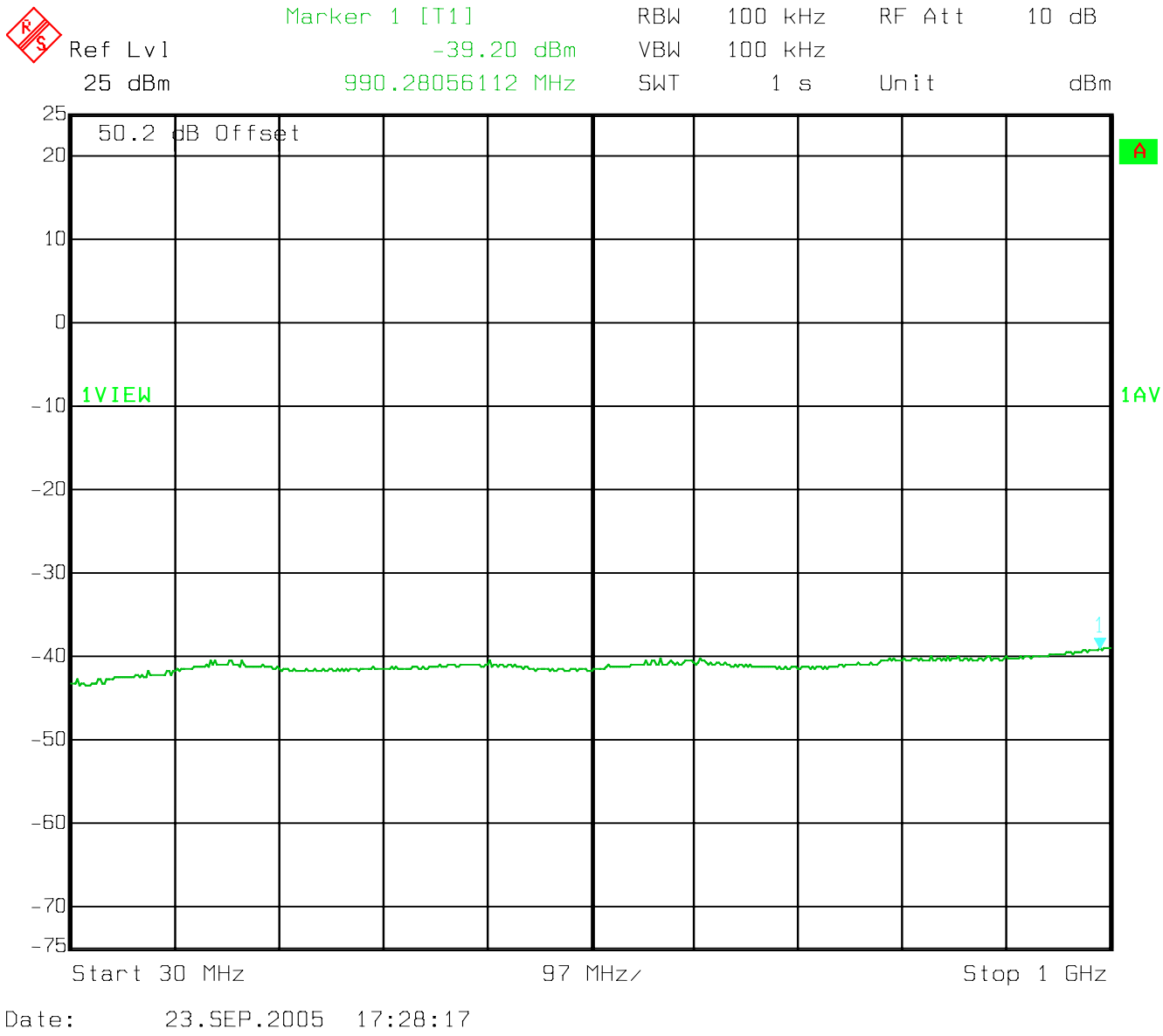
Test Result: Pass

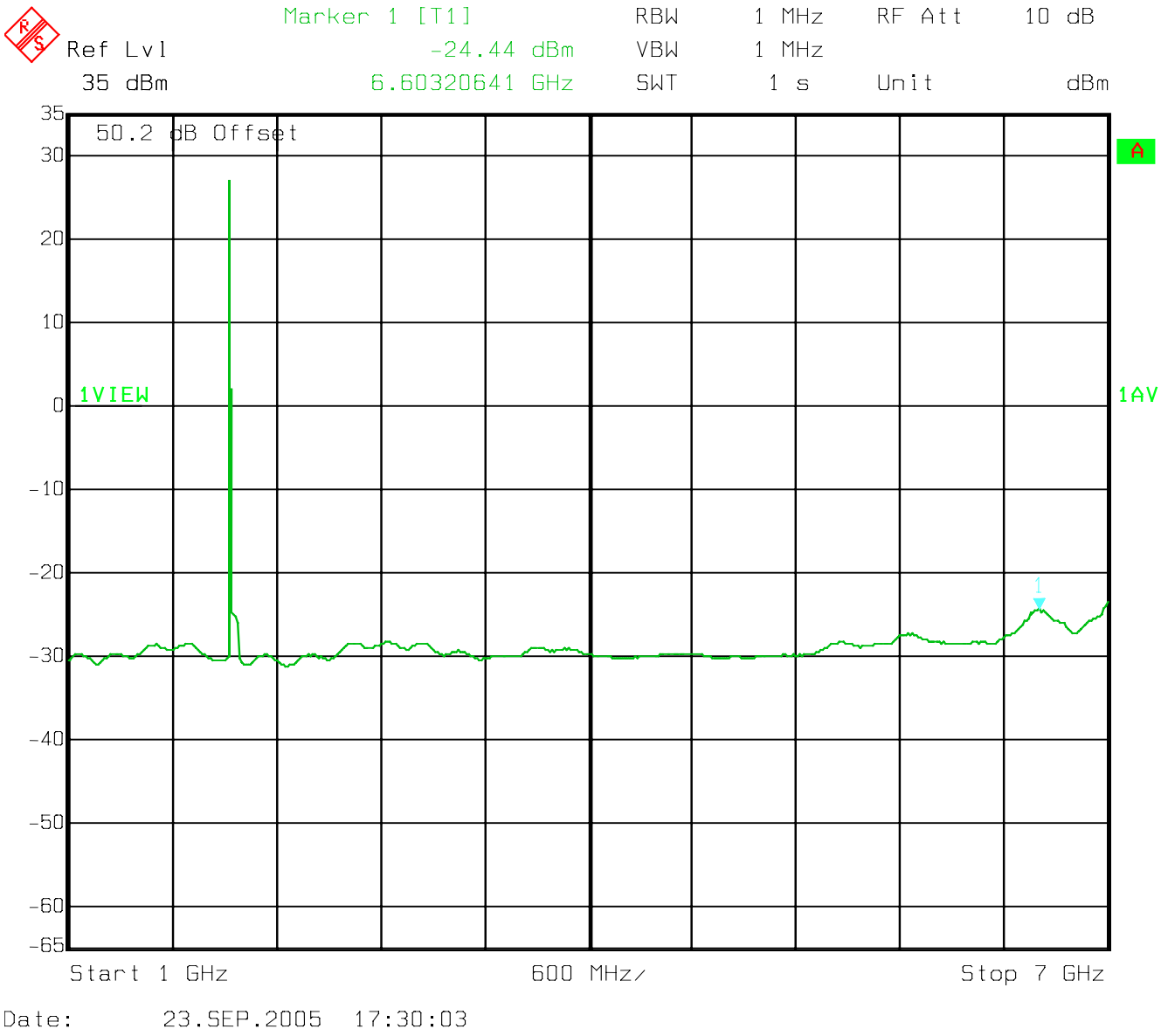
Test Mode: Transmitting

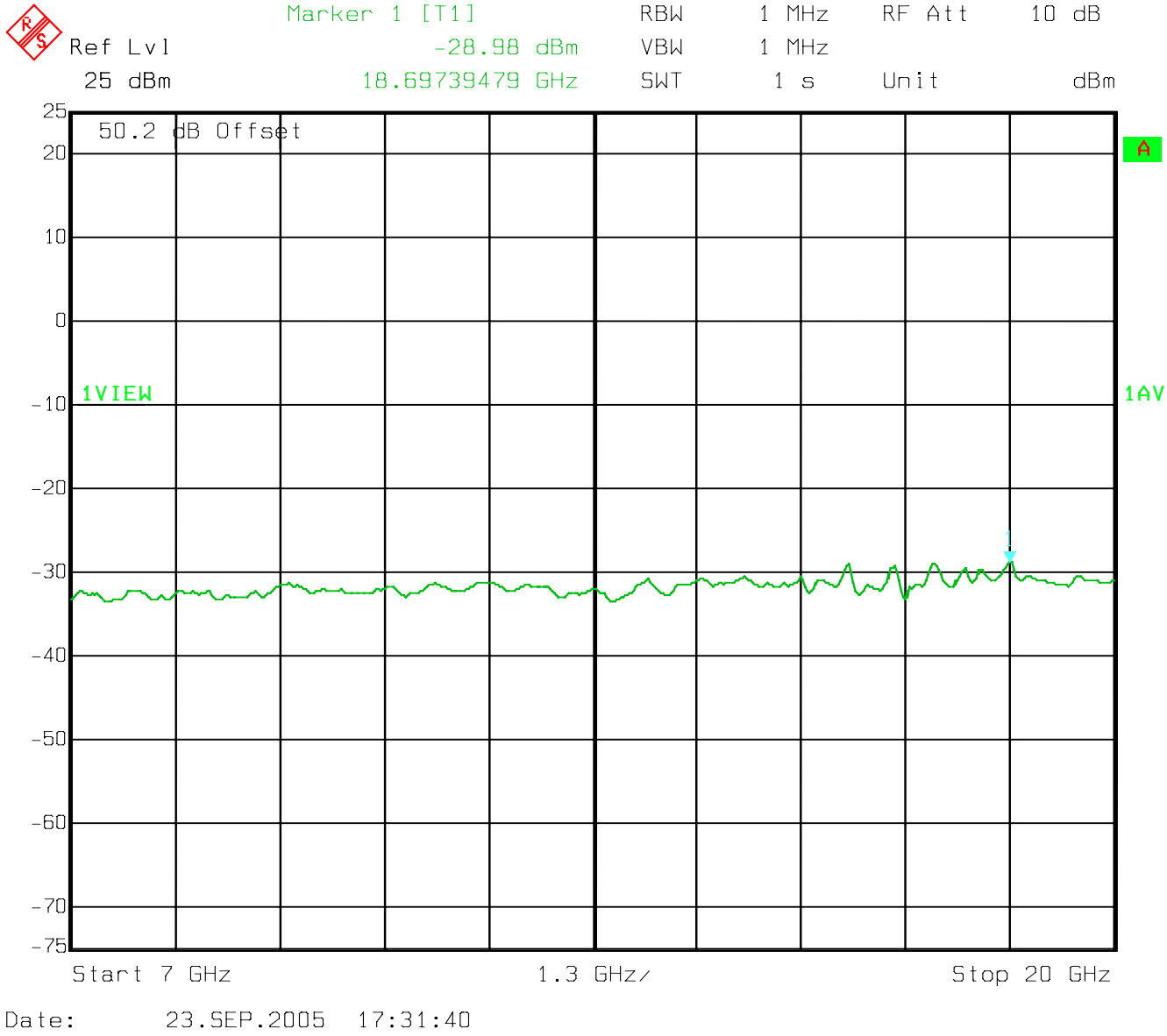
Channel 25


Marker 1 [T1]
-36.93 dBm
9.00000000 kHz
RBW 1 kHz
VBW 1 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
15 dBm
50.2 dB Offset
1VIEW
1AV
A
15
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-85
Start 9 kHz
14.1 kHz/
Stop 150 kHz
Date: 23.SEP.2005 17:24:51

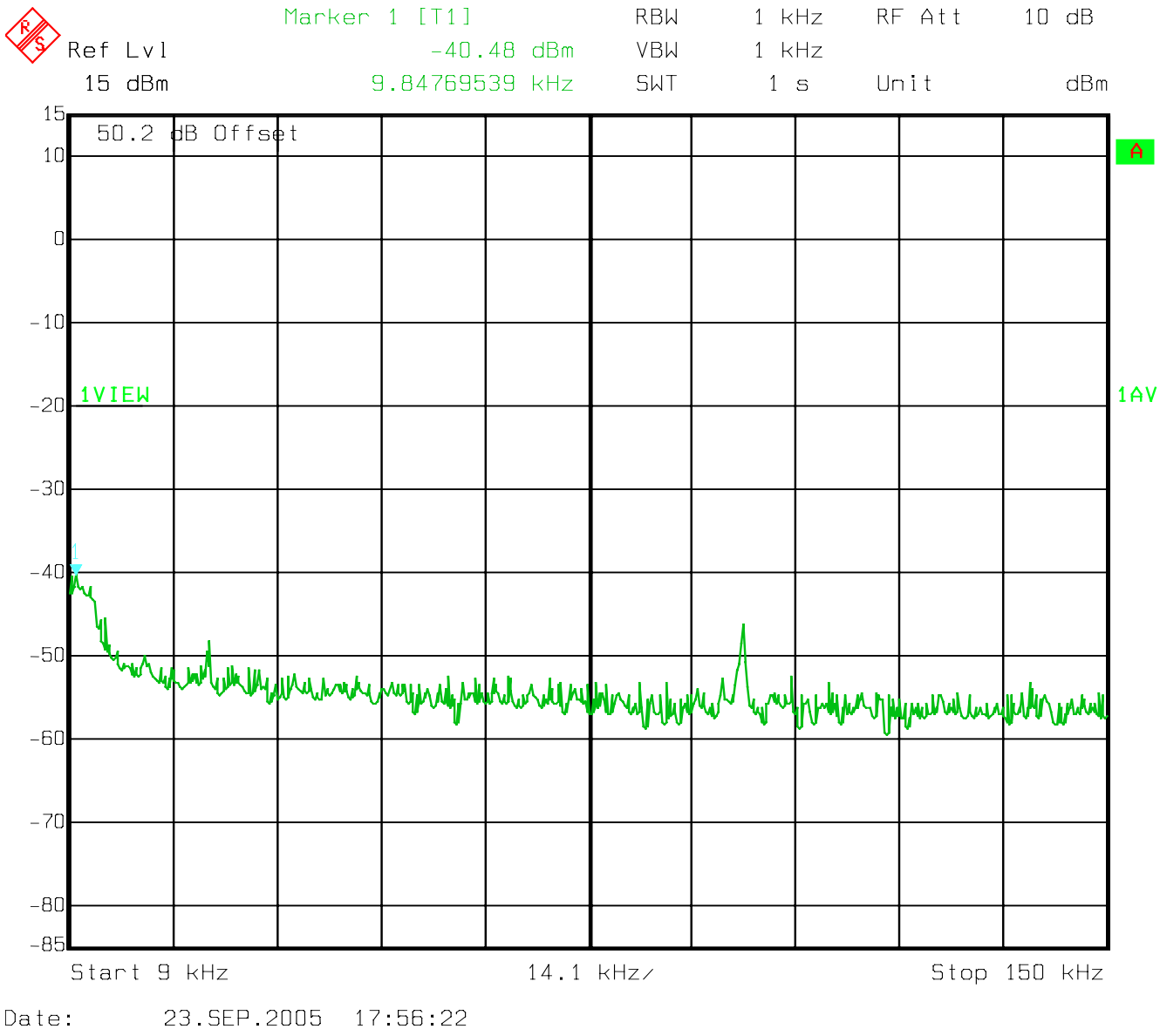

Marker 1 [T1]
Ref Lvl
15 dBm
-47.31 dBm
150.00000000 kHz
RBW 10 kHz
VBW 10 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
50.2 dB Offset
1VIEW
1AV
A
15
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-85
Start 150 kHz
2.985 MHz/
Stop 30 MHz
Date: 23.SEP.2005 17:26:39

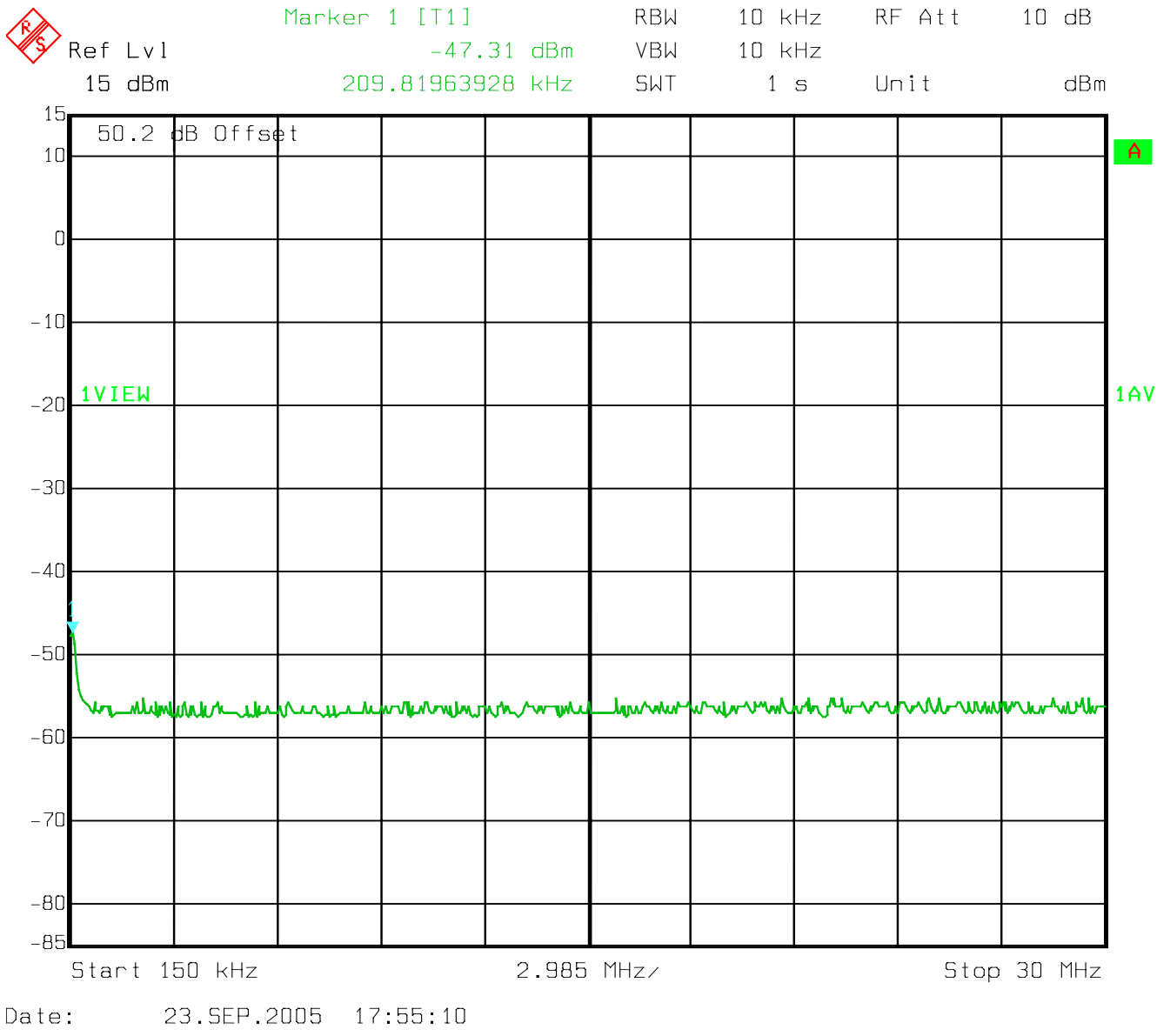

Marker 1 [T1]
Ref Lvl
25 dBm
-39.20 dBm
990.28056112 MHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
50.2 dB Offset
1VIEW
1AV
A
25
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 23.SEP.2005 17:28:17

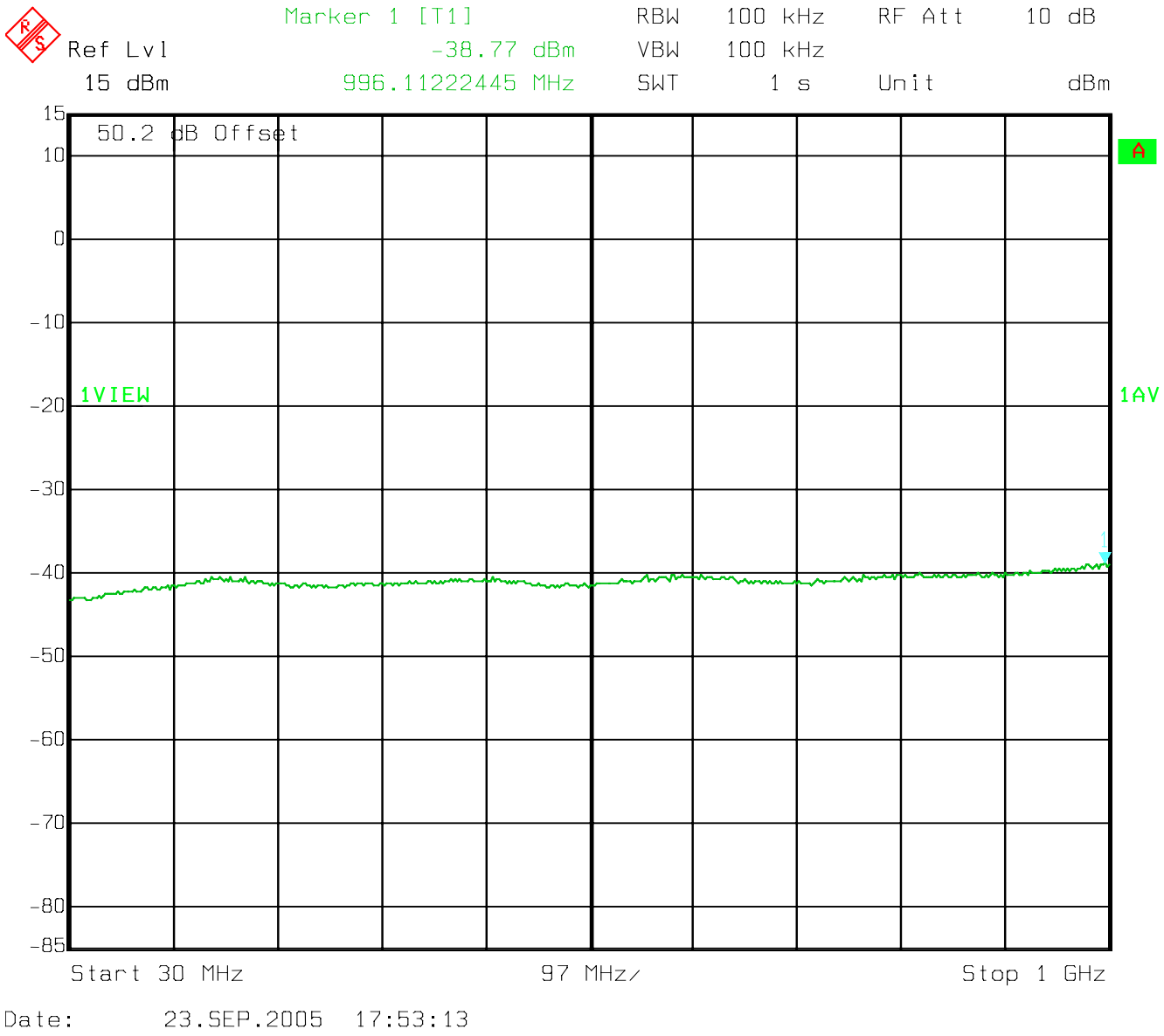

Marker 1 [T1]
Ref Lvl
35 dBm
-24.44 dBm
6.60320641 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 10 dB
Unit dBm
50.2 dB Offset
1VIEW
1AV
A
35
30
20
10
0
-10
-20
-30
-40
-50
-60
-65
Start 1 GHz
600 MHz/
Stop 7 GHz
Date: 23.SEP.2005 17:30:03

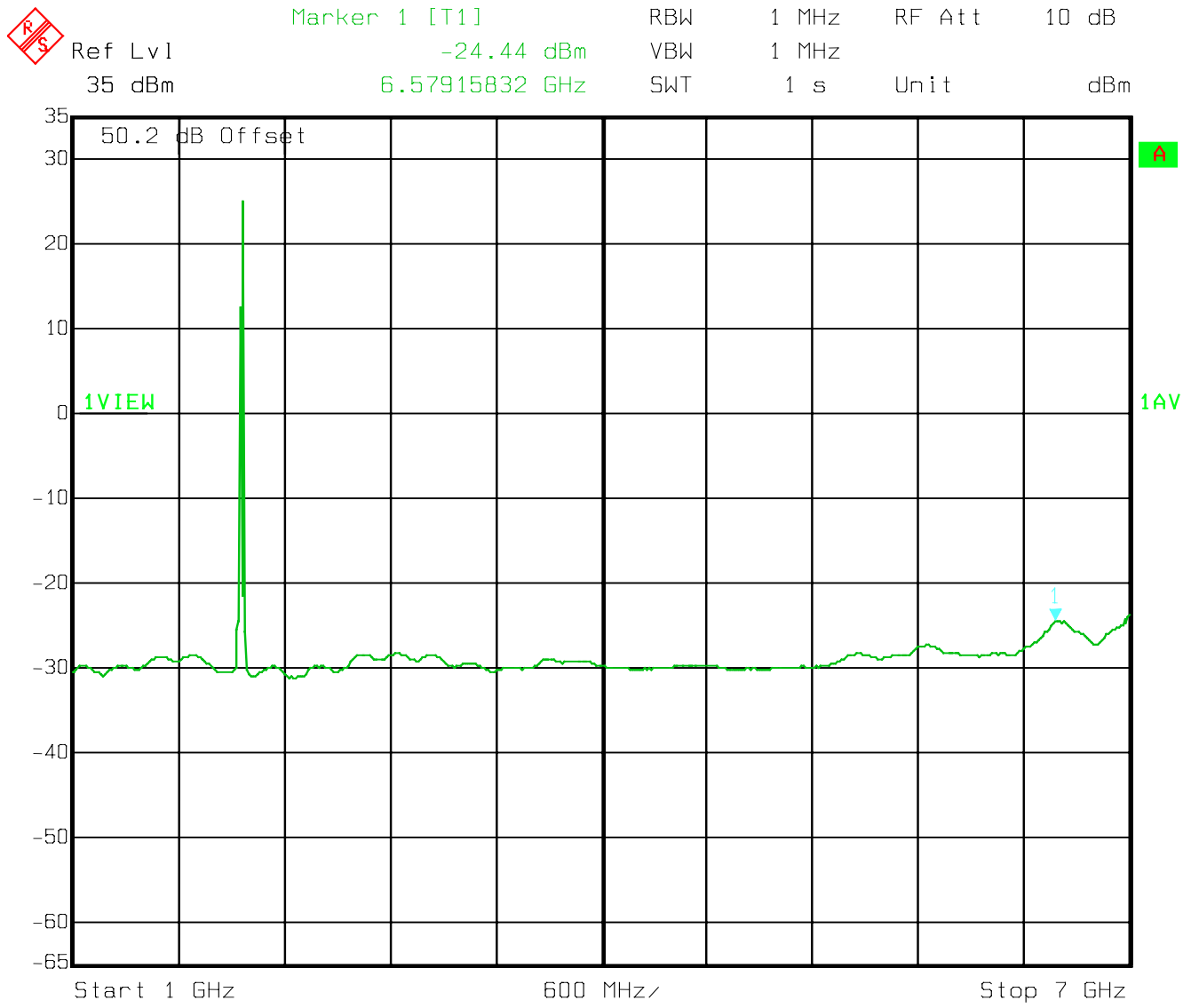

Marker 1 [T1]
-28.98 dBm
18.69739479 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
25 dBm
50.2 dB Offset
1VIEW
1AV
A
25
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75
Start 7 GHz
1.3 GHz/
Stop 20 GHz
Date: 23.SEP.2005 17:31:40

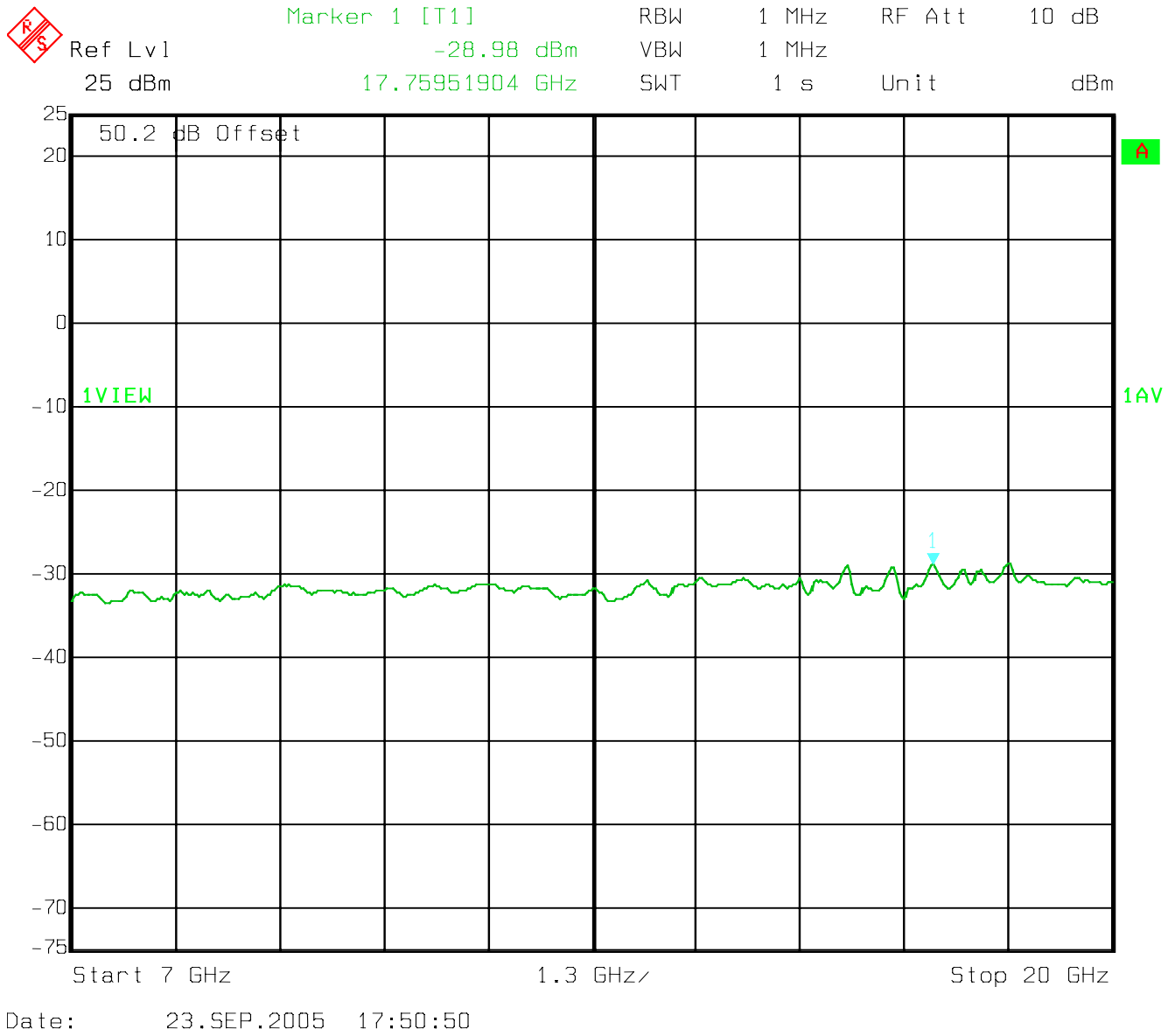
Channel 600


Marker 1 [T1]
-40.48 dBm
9.84769539 kHz
RBW 1 kHz
VBW 1 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
15 dBm
50.2 dB Offset
1VIEW
1AV
15
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-85
Start 9 kHz
14.1 kHz/
Stop 150 kHz
Date: 23.SEP.2005 17:56:22

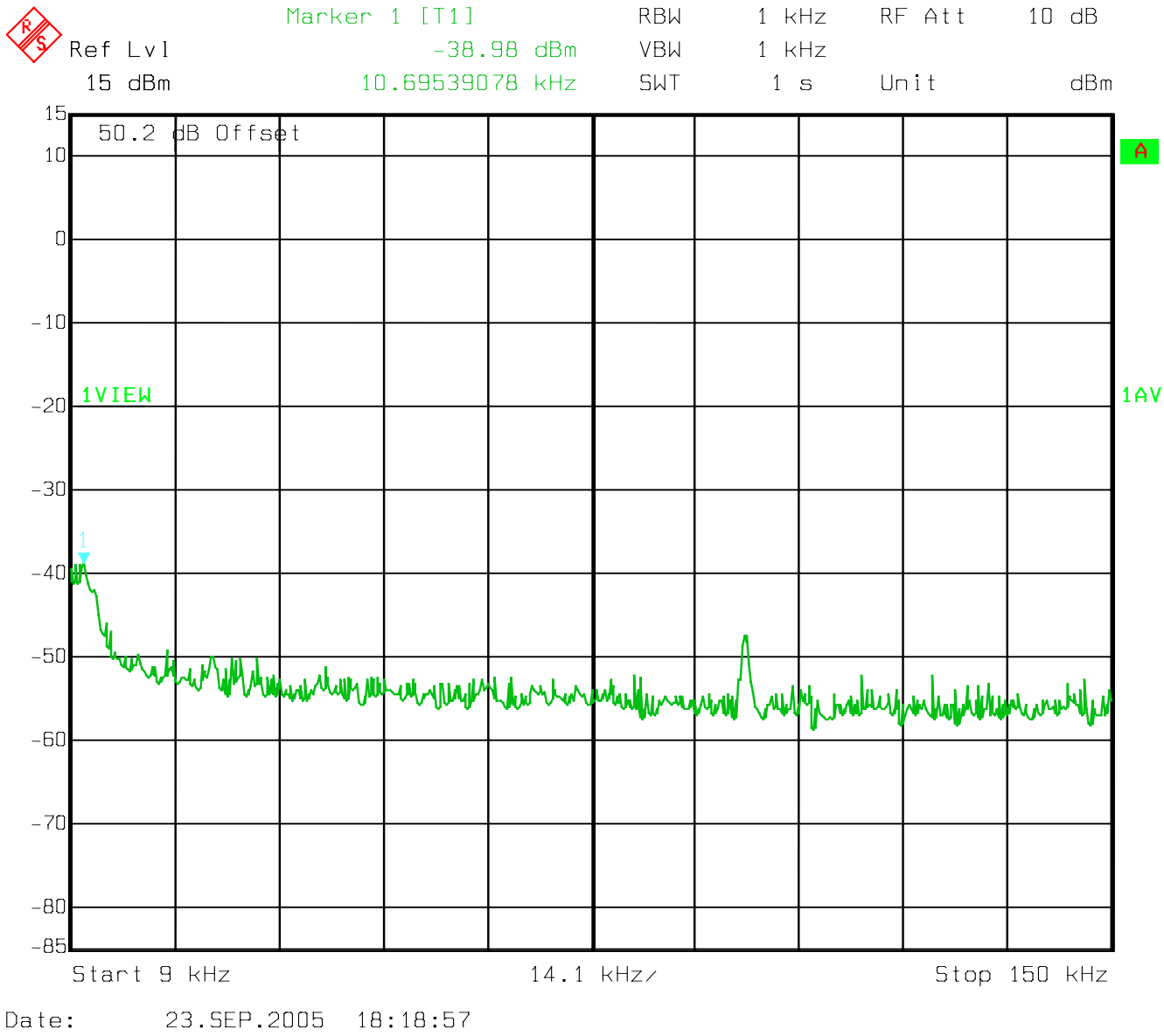

Marker 1 [T1]
RBW 10 kHz
RF Att 10 dB
Ref Lvl
-47.31 dBm
VBW 10 kHz
15 dBm
209.81963928 kHz
SWT 1 s
Unit dBm
50.2 dB Offset
A
1VIEW
1AV
15
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-85
Start 150 kHz
2.985 MHz/
Stop 30 MHz
Date: 23.SEP.2005 17:55:10

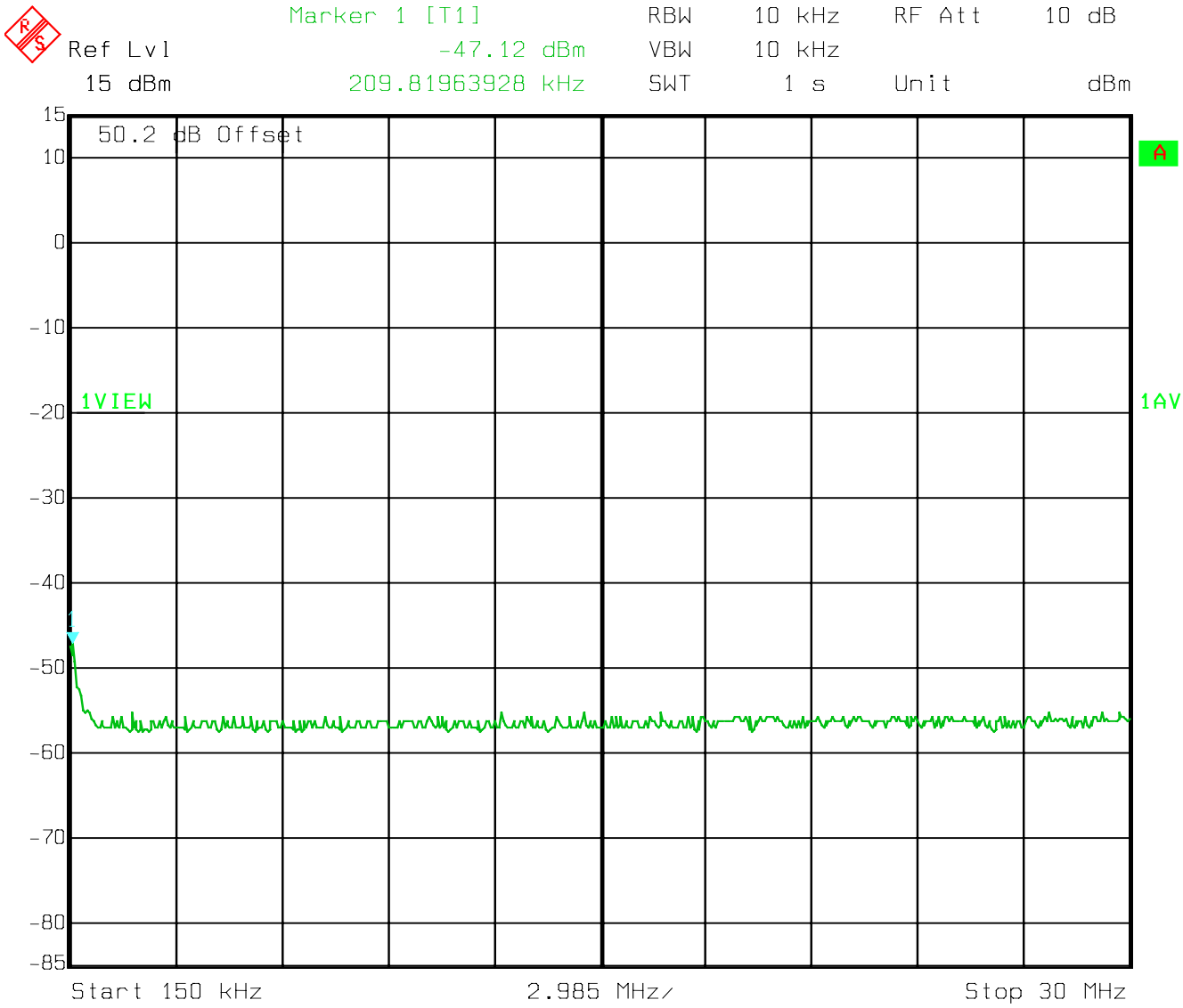

Marker 1 [T1]
RBW 100 kHz
RF Att 10 dB
Ref Lvl
-38.77 dBm
VBW 100 kHz
15 dBm
996.11222445 MHz
SWT 1 s
Unit dBm
50.2 dB Offset
1VIEW
1AV
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 23.SEP.2005 17:53:13

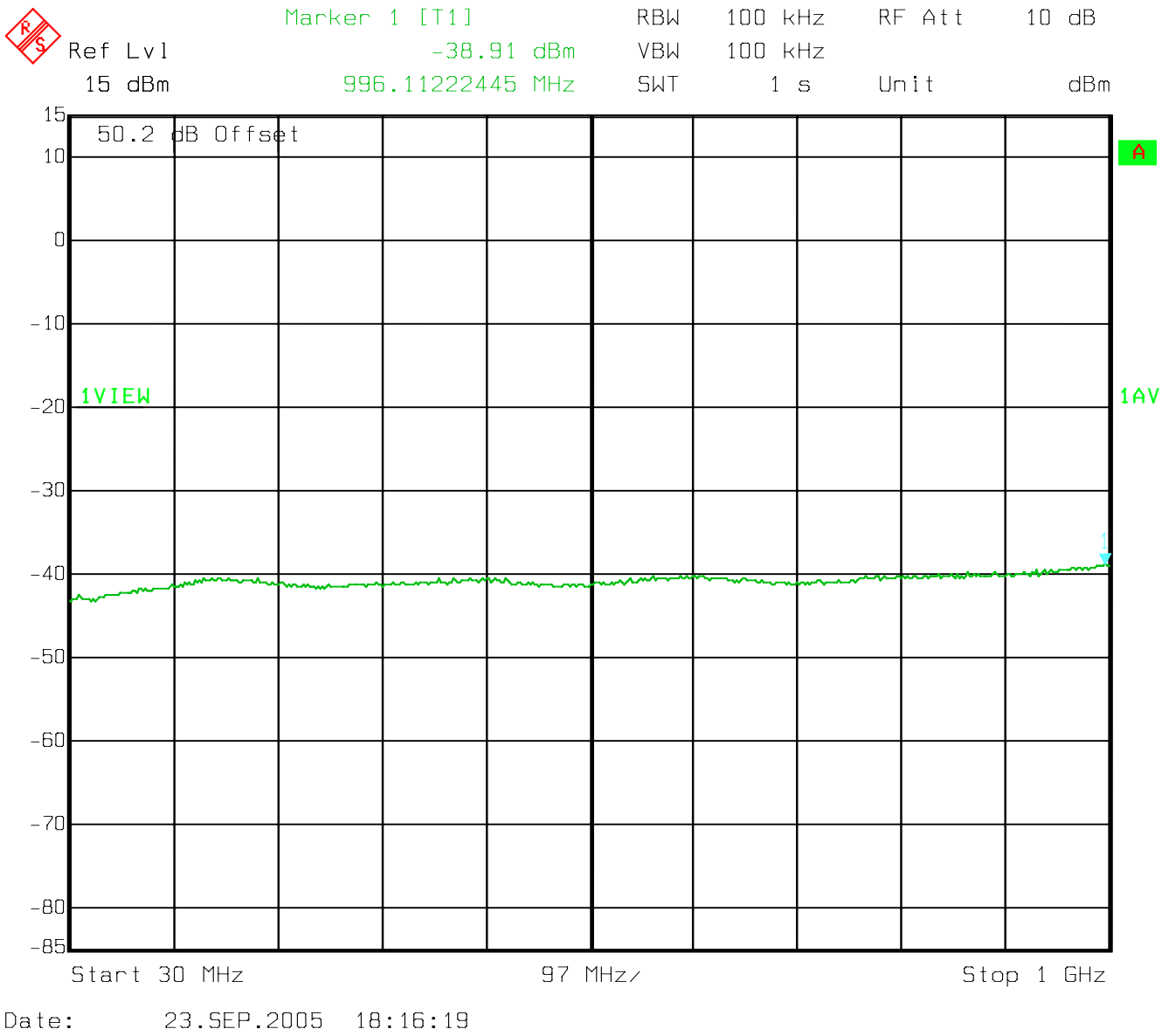

Marker 1 [T1]
-24.44 dBm
6.57915832 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
35 dBm
50.2 dB Offset
1VIEW
A
1AV
35
30
20
10
0
-10
-20
-30
-40
-50
-60
-65
Start 1 GHz
600 MHz/
Stop 7 GHz
Date: 23.SEP.2005 17:51:50

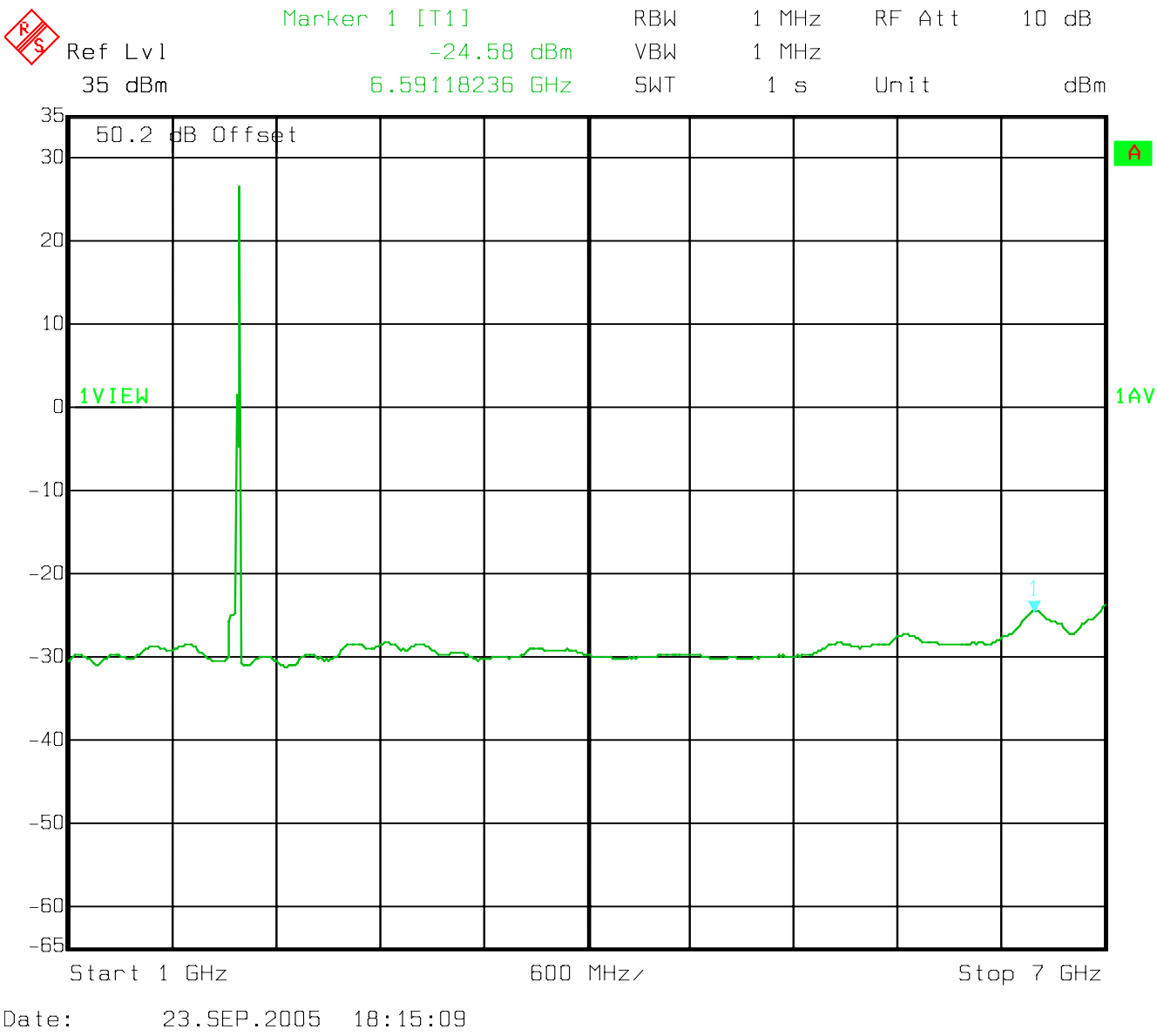

Marker 1 [T1]
-28.98 dBm
17.75951904 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
25 dBm
50.2 dB Offset
1VIEW
1AV
A
25
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75
Start 7 GHz
1.3 GHz/
Stop 20 GHz
Date: 23.SEP.2005 17:50:50

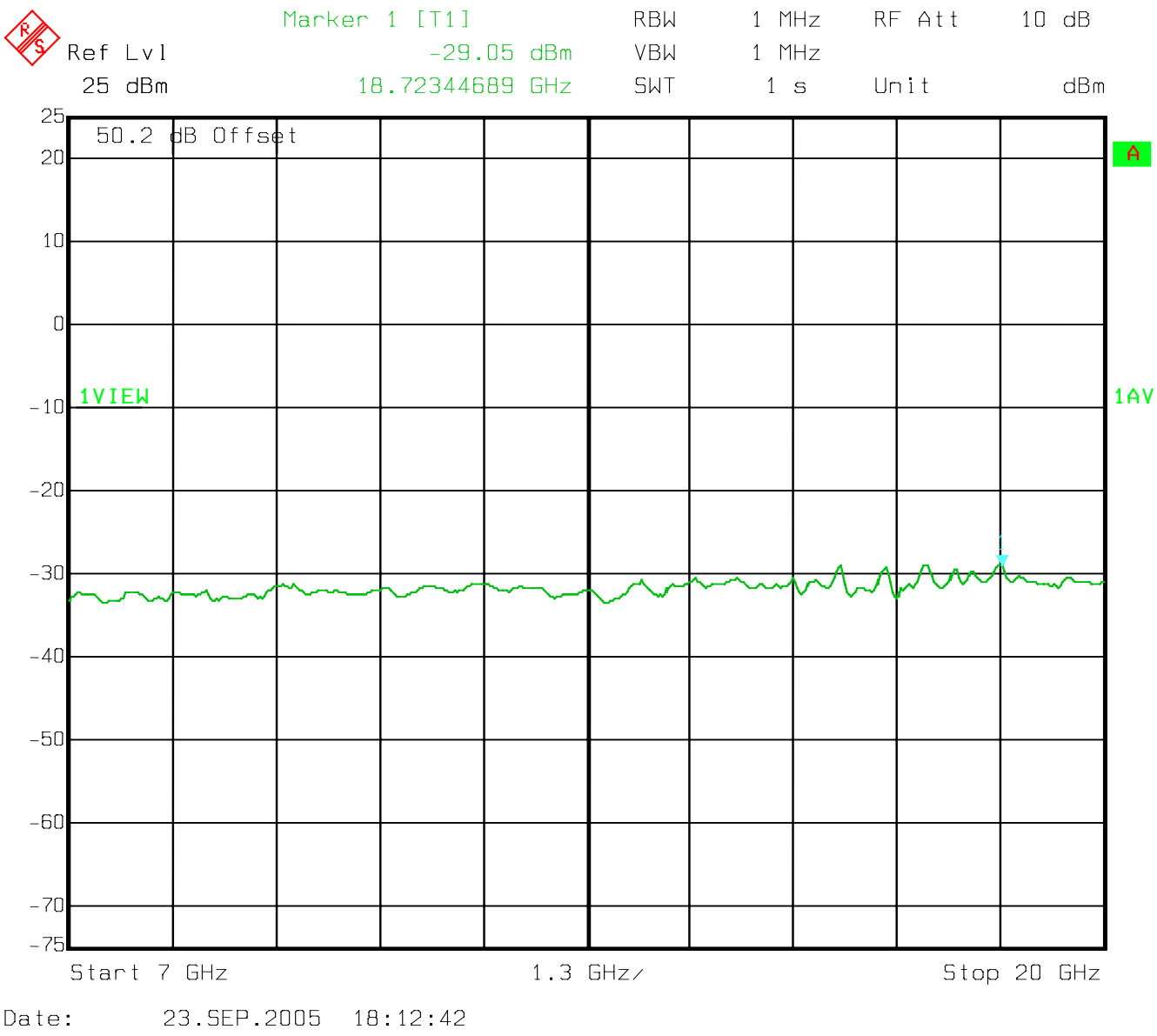
Channel 1175




Marker 1 [T1]
RBW 10 kHz
RF Att 10 dB
Ref Lvl
-47.12 dBm
VBW 10 kHz
15 dBm
209.81963928 kHz
SWT 1 s
Unit dBm
50.2 dB Offset
15
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-85
1VIEW
1AV
A
Start 150 kHz
2.985 MHz/
Stop 30 MHz
Date: 23.SEP.2005 18:17:38


Marker 1 [T1]
Ref Lvl
15 dBm
-38.91 dBm
996.11222445 MHz
RBW 100 kHz
VBW 100 kHz
SWT 1 s
RF Att 10 dB
Unit dBm
50.2 dB Offset
1VIEW
1AV
15
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-85
Start 30 MHz
97 MHz/
Stop 1 GHz
Date: 23.SEP.2005 18:16:19


Marker 1 [T1]
Ref Lvl
35 dBm
-24.58 dBm
6.59118236 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 10 dB
Unit dBm
50.2 dB Offset
1VIEW
1AV
A
35
30
20
10
0
-10
-20
-30
-40
-50
-60
-65
Start 1 GHz
600 MHz/
Stop 7 GHz
Date: 23.SEP.2005 18:15:09


Marker 1 [T1]
-29.05 dBm
18.72344689 GHz
RBW 1 MHz
VBW 1 MHz
SWT 1 s
RF Att 10 dB
Unit dBm
Ref Lvl
25 dBm
50.2 dB Offset
1VIEW
1AV
A
25
20
10
0
-10
-20
-30
-40
-50
-60
-70
-75
Start 7 GHz
1.3 GHz/
Stop 20 GHz
Date: 23.SEP.2005 18:12:42

§2.1049& §24.238-OCCUPIED BANDWIDTH

Applicable Standard

Requirements: CFR 47, Section 2.1049 and Section 24.238.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2005-6-3	2006-6-3

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The RF out of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set at 30 kHz and the 26 dB and 99%Power bandwidth was recorded.

Test Data

Environmental Conditions

Temperature:	25 ° C
Relative Humidity:	50%
ATM Pressure:	1009mbar

The testing was performed by Sam Lin on 2005-9-28.

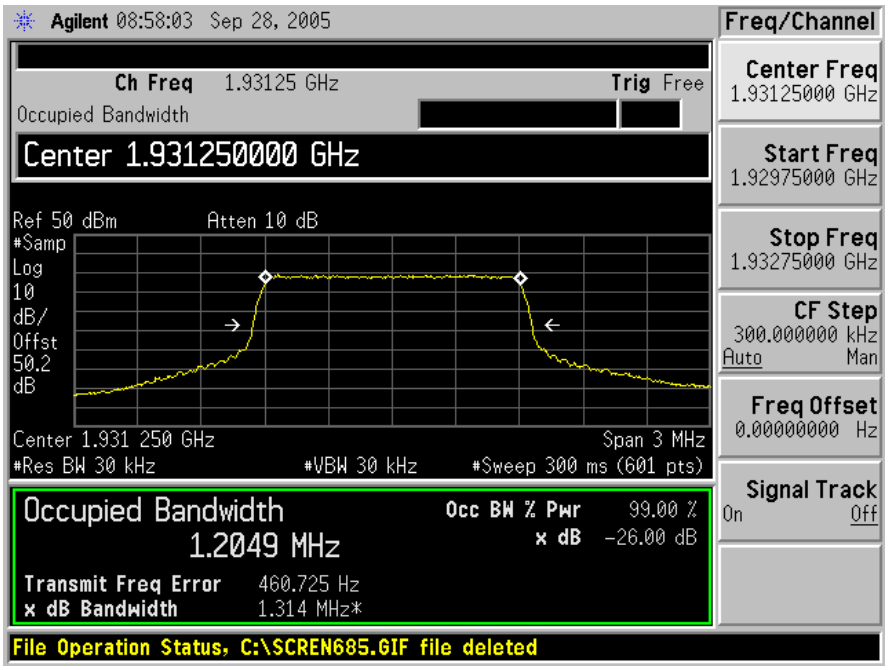
Test Result: Pass

Test Mode: Transmitting

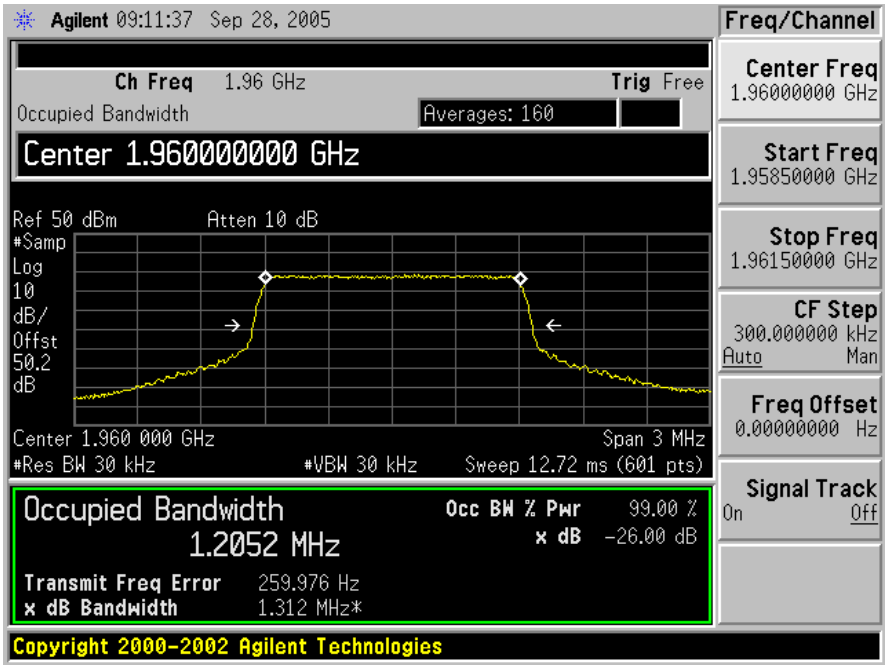
The result has been complied with the §2.1049 & §24.238, see the following plot:

Channel	Channel frequency (MHz)	99% Power Bandwidth (MHz)	26 dB Bandwidth (MHz)
Channel 25	1931.25	1.2049	1.314
Channel 600	1960.00	1.2052	1.312
Channel 1175	1988.75	1.2058	1.311

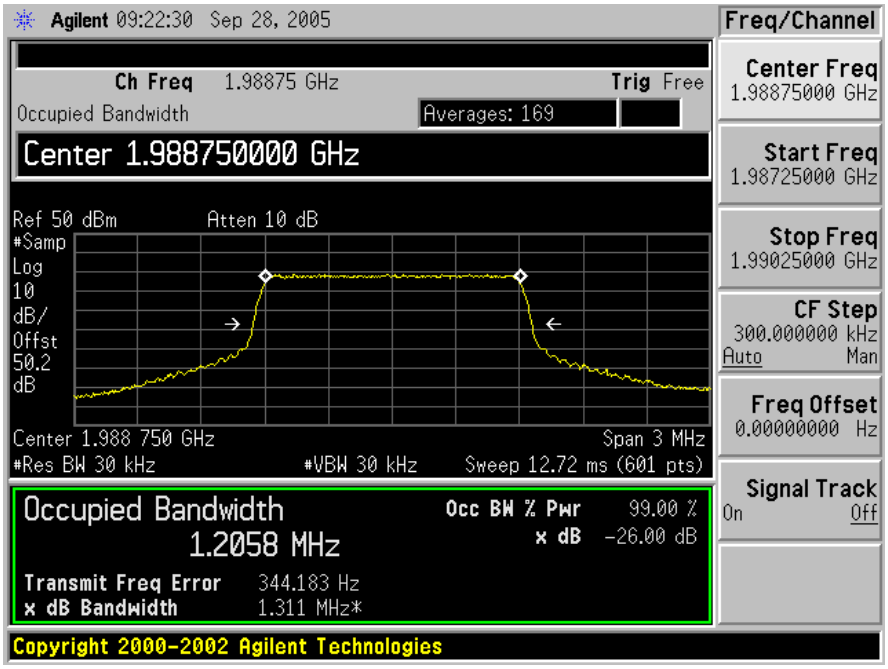
Channel 25



Channel 600



Channel 1175



§24.238- BAND EDGES

Applicable Standard

According to §24.238, the power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (p) by a factor of at least 43+10 log (p) dB.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Spectrum Analyzer	FSEM30	849720/019	2004-11-10	2005-11-10

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

The center of the spectrum analyzer was set to block edge frequency, RBW set to 30 kHz.

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	59%
ATM Pressure:	1009 mbar

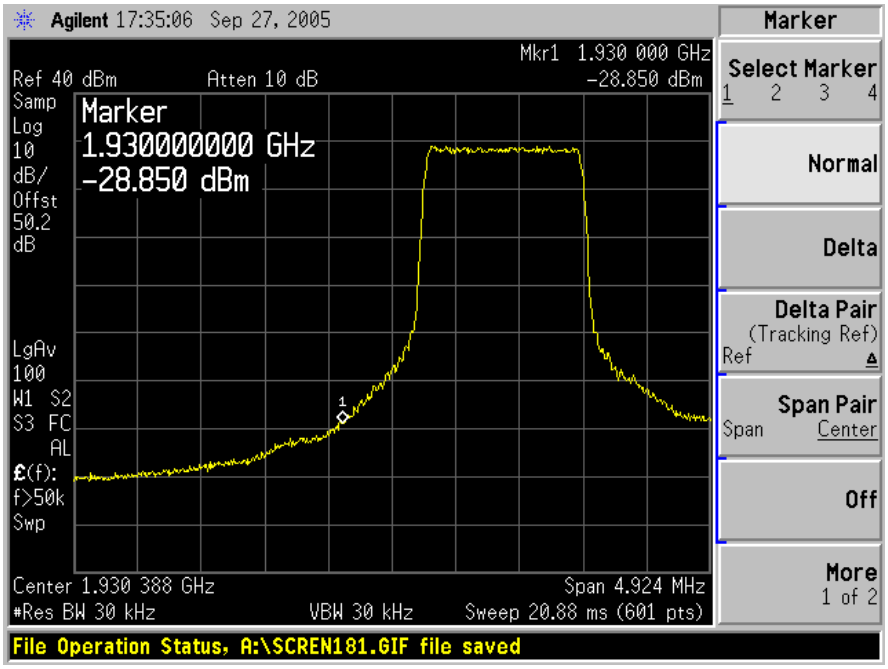
The testing was performed by Sam Lin on 2005-9-27.

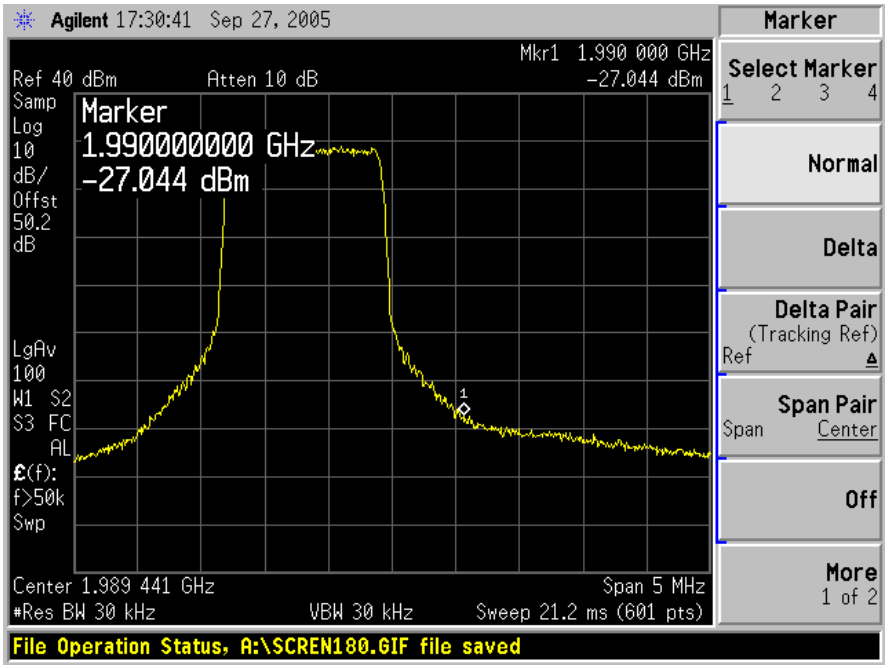
Test Result: Pass

Test Mode: Transmitting

The result has been complied with the §24.238, see the following plot:

Frequency MHz	Emission dBm	Limit dBm
1930.00	-28.850	-13.00
1990.00	-27.044	-13.00


Agilent 17:35:06 Sep 27, 2005
Marker
Mkr1 1.930 000 GHz
Ref 40 dBm
Atten 10 dB
-28.850 dBm
Samp
Log
10
dB/
Offst
50.2
dB
Marker
1.930000000 GHz
-28.850 dBm
LgAv
100
W1 S2
S3 FC
AL
£(f):
f>50k
Swp
Center 1.930 388 GHz
Span 4.924 MHz
#Res BW 30 kHz
VBW 30 kHz
Sweep 20.88 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
File Operation Status, A:\SCREN181.GIF file saved


Agilent 17:30:41 Sep 27, 2005
Marker
Mkr1 1.990 000 GHz
Ref 40 dBm
Atten 10 dB
-27.044 dBm
Samp
Log
10
dB/
Offst
50.2
dB
Marker
1.990000000 GHz
-27.044 dBm
LgAv
100
W1 S2
S3 FC
AL
£(f):
f>50k
Swp
Center 1.989 441 GHz
Span 5 MHz
#Res BW 30 kHz
VBW 30 kHz
Sweep 21.2 ms (601 pts)
Select Marker
1 2 3 4
Normal
Delta
Delta Pair
(Tracking Ref)
Ref
Span Pair
Span Center
Off
More
1 of 2
File Operation Status, A:\SCREN180.GIF file saved

§2.1055 (a), §2.1055 (d) & §24.235 - FREQUENCY STABILITY

Applicable Standard

Requirements: FCC § 2.1055 (a), § 2.1055 (d) & following:

According to §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	PSA Spectrum Analyzer	E4445A	MY44300451	2005-6-3	2006-6-3
GZ-ESPEC	Temperature Chamber	GRW-120	00020268	2005-3-8	2006-3-8
Chroma	DC Power	6230K-80	N/A	2005-8-11	2006-8-11

*** Statement of Traceability:** Bay Area Compliance Lab Corp. (ShenZhen) attests that all calibrations have been performed in accordance to NVLAP requirements, traceable to the NIST.

Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a f Spectrum Analyzer via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the Spectrum Analyzer.

Frequency Stability vs. Voltage: An external variable DC power supply Source. The voltage was set to 115% of the nominal value and was then decreased until the transmitter light no longer illuminated; i.e., the end point. The output frequency was recorded for each voltage.

Test Data

Environmental Conditions

Temperature:	20° C
Relative Humidity:	49%
ATM Pressure:	1009 mbar

The testing was performed by Sam Lin on 2005-9-30.

Test Result: Pass

Test Mode: Transmitting

Frequency Stability Versus Temperature

Frequency Stability vs. Temperature				
Temperature ℃	Power Supplied Vdc	Frequency Measure Error Hz	Error ppm	Result
CH25 f=1931.25MHz				
-5	-48	-4.01	0.002076	PASS
5	-48	-3.13	0.001621	PASS
15	-48	-3.47	0.001797	PASS
25	-48	2.49	0.0012893	PASS
35	-48	2.10	0.0010874	PASS
45	-48	-1.79	0.000927	PASS
CH600 f=1960.00MHz				
-5	-48	4.9	0.0025	PASS
5	-48	-3.66	0.001867	PASS
15	-48	4.01	0.0020459	PASS
25	-48	-3.70	0.001888	PASS
35	-48	-2.80	0.001429	PASS
45	-48	-2.22	0.001133	PASS
CH1175 f=1988.75MHz				
-5	-48	4.47	0.0022476	PASS
5	-48	3.25	0.0016342	PASS
15	-48	-3.81	0.001916	PASS
25	-48	3.32	0.0016694	PASS
35	-48	-1.57	0.000789	PASS
45	-48	-1.89	0.00095	PASS

Frequency Stability Versus Voltage

Frequency Stability vs. Voltage				
Voltage Vdc	Temperature ℃	Frequency Measure Error Hz	Error ppm	Limit 1.5ppm
CH25 f=1931.25MHz				
-42	20	-3.05	0.001579	PASS
-46	20	2.90	0.0015016	PASS
-48	20	-2.36	0.001222	PASS
-50	20	-1.14	0.00059	PASS
-54	20	-3.95	0.002045	PASS
-58	20	2.57	0.0013307	PASS
CH600 f=1960.00MHz				
-42	20	3.20	0.0016327	PASS
-46	20	-4.41	0.00225	PASS
-48	20	4.25	0.0021684	PASS
-50	20	-4.80	0.002449	PASS
-54	20	4.45	0.0022704	PASS
-58	20	4.68	0.0023878	PASS
CH1175 f=1988.75MHz				
-42	20	2.96	0.0014884	PASS
-46	20	-5.01	0.002519	PASS
-48	20	-3.69	0.001855	PASS
-50	20	-2.30	0.001157	PASS
-54	20	-3.12	0.001569	PASS
-58	20	-3.84	0.001931	PASS